

=> d que l36

L4 1 SEA FILE=REGISTRY ABB=ON PLU=ON STYRENE/CN
 L9 1 SEA FILE=REGISTRY ABB=ON PLU=ON ACRYLIC ACID/CN
 L10 1 SEA FILE=REGISTRY ABB=ON PLU=ON ACRYLAMIDE/CN
 L12 2 SEA FILE=REGISTRY ABB=ON PLU=ON ("DIMETHYLACRYLAMIDE
 HOMOPOLYMER"/CN OR "DIMETHYLACRYLAMIDE, HOMOPOLYMER"/CN)
 L13 4307173 SEA FILE=HCAPLUS ABB=ON PLU=ON SUBSTRATE OR SURFACE OR GLASS
 OR SILIC?
 L14 354874 SEA FILE=HCAPLUS ABB=ON PLU=ON SILICA+PFT, NT/CT
 L15 281364 SEA FILE=HCAPLUS ABB=ON PLU=ON GLASS+PFT, NT/CT
 L16 25366 SEA FILE=HCAPLUS ABB=ON PLU=ON (L13 OR L14 OR L15) AND
 (HYDROPHOB? OR STYRENE? OR L4) AND (HYDROPHIL? OR L9 OR L10 OR
 L12 OR ACRYLAMID? OR DIMETHYLACRYLAMID? OR ACRYLIC ACID)
 L17 12113 SEA FILE=HCAPLUS ABB=ON PLU=ON L16 AND (SUBSTRATE OR GLASS
 OR SILICA)
 L18 1094 SEA FILE=HCAPLUS ABB=ON PLU=ON L17 AND HYDROPHOB? (3A) (LAYER
 OR COAT? OR SURFAC?) AND HYDROPHIL? (3A) (LAYER OR COAT? OR
 SURFAC?)
 L20 1515 SEA FILE=HCAPLUS ABB=ON PLU=ON L17 AND ?STYREN? AND ?ACRYLAMI
 D?
 L21 13 SEA FILE=HCAPLUS ABB=ON PLU=ON L20 AND ?BRUSH?
 L22 6 SEA FILE=HCAPLUS ABB=ON PLU=ON L18 AND ?BRUSH?
 L23 19 SEA FILE=HCAPLUS ABB=ON PLU=ON L21 OR L22
 L28 1554 SEA FILE=HCAPLUS ABB=ON PLU=ON POLYMER? (3A) ?BRUSH?
 L29 21 SEA FILE=HCAPLUS ABB=ON PLU=ON L28 AND HYDROPHOB? AND
 HYDROPHIL? AND (SUBSTRAT? OR SILICA? OR ?GLASS?)
 L30 36 SEA FILE=HCAPLUS ABB=ON PLU=ON L29 OR L23
 L31 5426 SEA FILE=HCAPLUS ABB=ON PLU=ON HYDROPHOB? AND HYDROPHIL? AND
 (SUBSTRAT? OR SILICA? OR ?GLASS?)
 L32 21399 SEA FILE=HCAPLUS ABB=ON PLU=ON "IMMOBILIZATION, MOLECULAR OR
 CELLULAR"+PFT, NT/CT
 L33 268 SEA FILE=HCAPLUS ABB=ON PLU=ON L31 AND (L32 OR IMMOBILI?)
 L34 17318 SEA FILE=HCAPLUS ABB=ON PLU=ON BIOCHEMICAL MOLECULES+PFT/CT
 OR BIOMOLECUL?
 L35 20 SEA FILE=HCAPLUS ABB=ON PLU=ON L33 AND L34
 L36 54 SEA FILE=HCAPLUS ABB=ON PLU=ON L30 OR L35

=> d l36 ibib abs hitind 1-54

L36 ANSWER 1 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2004:387306 HCAPLUS
 DOCUMENT NUMBER: 140:388198
 TITLE: Multicomponent protein microarrays.
 INVENTOR(S): Brennan, John D.; Rupcich, Nicholas
 PATENT ASSIGNEE(S): McMaster University, Can.
 SOURCE: PCT Int. Appl., 44 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004039487	A1	20040513	WO 2003-CA1665	20031103
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE,				

GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK,
LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ,
OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,
FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR,
BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2002-422892P P 20021101

AB The present invention involves a multicomponent protein microarray comprising two or more components of a protein-based system entrapped within spots of a biomol. compatible matrix arranged on a surface. Also included are methods of using the microarray for multicomponent anal. along with kits and machinery comprising the microarray.

IC ICM B01J019-00

ICS G01N033-552

CC 9-1 (Biochemical Methods)

IT **Immobilization, molecular or cellular**
(Entrapment; multicomponent protein microarrays)

IT **Biochemical molecules**

(compatible matrix; multicomponent protein microarrays)

IT Polymers, uses

RL: DEV (Device component use); USES (Uses)

(**hydrophilic, hydrophobic, neutral or charged organic;**
multicomponent protein microarrays)

IT Adhesion, physical

Animal

Biosensors

Ceramics

Cleaning

Composites

Coupling agents

Databases

Gels

Humectants

Hydrophilicity

Machinery

Medical goods

Micromachines

Organic matter

Polyelectrolytes

Sols

Solutions

Surface

Test kits

Therapy

Toxicity

(multicomponent protein microarrays)

IT **Glass, uses**

RL: DEV (Device component use); USES (Uses)

(multicomponent protein microarrays)

IT 50-69-1, Ribose 50-70-4, Sorbitol, uses 50-70-4D, Sorbitol, silane derivs. 50-99-7, D-Glucose, uses 56-81-5, Glycerol, uses 56-81-5D, Glycerol, silane derivs. 56-82-6, Glyceraldehyde 57-48-7, D-Fructose, uses 57-50-1, Sucrose, uses 58-86-6, Xylose, uses 59-23-4, D-Galactose, uses 63-42-3, Lactose 65-42-9, Lyxose 69-79-4, Maltose 69-79-4D, Maltose, silane derivs. 87-79-6, L-Sorbose 99-20-7, Trehalose 107-97-1, Sarcosine 147-81-9, Arabinose 528-50-7,

Celllobiose 919-30-2, Aminopropyltriethoxysilane 1344-09-8, Sodium silicate 1758-51-6, Erythrose 2152-76-3, Idose 3458-28-4, D-Mannose 5987-68-8, Altrose 6038-51-3, Allose 9000-69-5, Pectin 9004-54-0, Dextran, uses 9004-54-0D, Dextran, silane derivs. 9005-82-7, Amylose 19163-87-2, Gulose 25322-68-3, Polyethylene glycol 29884-64-8, Threose 30077-17-9, Talose 37231-28-0, Melittin 498579-33-2
RL: DEV (Device component use); USES (Uses)
(multicomponent protein microarrays)

L36 ANSWER (2) OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:231061 HCAPLUS
DOCUMENT NUMBER: 141:24383
TITLE: Mixed polymer brushes with thermal response amplified by roughness
AUTHOR(S): Usov, Denys; Nitschke, Mirko; Chitry, Vladimir; Ulbrich, Karel; Minko, Sergiy; Stamm, Manfred
CORPORATE SOURCE: Institut fuer Polymerforschung Dresden e. V., Dresden, D-01069, Germany
SOURCE: Polymeric Materials Science and Engineering (2004), 90, 622-623
CODEN: PMSEDG; ISSN: 0743-0515
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal; (computer optical disk)
LANGUAGE: English
AB Surface immobilized poly(N-iso-Pr acrylamide) (PNiPAAm) layers show reversible gradual change of water advancing contact angle from hydrophilic (<50°) at ambient temperature to hydrophobic (90-120°) above 40°. The receding water contact angle remains unchanged (about 40°) upon the thermal transition. In this report an approach how to broaden the range of the thermal switching and simultaneously reduce the contact angle hysteresis was described with the concept of mixed polymer brushes covalently grafted to a rough substrate. The high roughness of the substrate amplifies the thermal switching of wettability, while presence of the second hydrophobic polymer in the brush elevates the receding contact angle and thus reduces the water contact angle hysteresis.
CC 37-5 (Plastics Manufacture and Processing)
ST polymer brush substrate grafting water contact angle hysteresis
IT Polymers, preparation
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (graft; preparation of mixed polymer brushes and their thermal switching of wetting properties)
IT Wettability (of substrate surfaces covered by mixed polymer brushes)
IT Fluoropolymers, preparation
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (reaction product with α,ω-dicarboxy-terminated (meth)acrylate polymers, graft; preparation of mixed polymer brushes and their thermal switching of wetting properties)
IT Contact angle (water; of substrate surfaces covered by mixed polymer brushes)
IT 2530-83-8, γ-Glycidoxypolypropyltrimethoxysilane
RL: MOA (Modifier or additive use); USES (Uses) (preparation of mixed polymer brushes and their thermal

switching of wetting properties)
 IT 7440-21-3DP, **Silicon**, reaction product with α,ω -dicarboxy-terminated (meth)acrylate polymers, graft 7631-86-9DP, **Silicon dioxide**, reaction product with α,ω -dicarboxy-terminated (meth)acrylate polymers, graft 9002-84-0DP, PTFE, reaction product with α,ω -dicarboxy-terminated (meth)acrylate polymers, graft 28407-09-2DP, 2,3,4,5,6-Pentafluorostyrene-styrene copolymer, α,ω -dicarboxy-terminated, reaction product with **silicon** or PTFE, graft 98888-24-5DP, Methyl acrylate-1,1,1,3,3,3-hexafluoroisopropyl methacrylate copolymer, α,ω -dicarboxy-terminated, reaction product with **silicon** or PTFE, graft
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (preparation of mixed **polymer brushes** and their thermal switching of wetting properties)

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 8 OF 54 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2004:230926 HCPLUS
 DOCUMENT NUMBER: 141:38955
 TITLE: Photochemical structuring of binary **polymer brush** layers via photodimerization
 AUTHOR(S): Hoffmann, Frank; Wolff, Thomas; Minko, Sergiy; Stamm, Manfred
 CORPORATE SOURCE: Institut fuer Physikalische Chemie, Technische Universitaet Dresden, Dresden, 01062, Germany
 SOURCE: Polymeric Materials Science and Engineering (2004), 90, 374-375
 CODEN: PMSEDG; ISSN: 0743-0515
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal; (computer optical disk)
 LANGUAGE: English

AB Switchable binary **polymer brushes** grafted to Si-wafers were prepared from **hydrophilic** and **hydrophobic** polymer components. When exposed to solvents, either the **hydrophobic** or the **hydrophilic** component extends into the liquid phase, depending on the polarity of the solvent. The **hydrophilic** component was poly-2-vinylpyridine, the **hydrophobic** component was made photocrosslinkable in that a polystyrene copolymer containing a photodimerizing chromophore was used. In this system surfaces differing in water contact angle between 60° and 100° can be produced by variation of the solvent. The chromophore was phenylindene, which forms crosslinks upon direct UV-irradiation. Therefore, the polystyrene component can be fixed in the extended or collapsed state. By irradiation through an appropriate mask, surfaces can be structured and the structures fixed.

CC 35-8 (Chemistry of Synthetic High Polymers)
 ST photochem structuring binary **polymer brush** layer
 photodimerization

IT Crosslinking
 (photochem.; photochem. structuring of binary **polymer brush** layers via photodimerization)

IT Dimerization
 (photodimerization; photochem. structuring of binary **polymer brush** layers via photodimerization)

IT Polymer morphology
 (structure formation; photochem. structuring of binary **polymer brush** layers via photodimerization)

IT 25014-15-7, Poly(2-vinylpyridine) 216872-32-1, Styrene-2-(4-styryl)indene copolymer
 RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
 (brushes on silicon substrate; photochem. structuring of binary polymer brush layers via photodimerization)

IT 7440-21-3, Silicon, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (substrate; photochem. structuring of binary polymer brush layers via photodimerization)

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 4 OF 54 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:230917 HCPLUS

DOCUMENT NUMBER: 141:29169

TITLE: Designing nanoscale surface layers with tunable properties

AUTHOR(S): Tsukruk, Vladimir V.

CORPORATE SOURCE: Department of Materials Science and Engineering, Iowa State University, Ames, IA, USA

SOURCE: Polymeric Materials Science and Engineering (2004), 90, 357

CODEN: PMSEDG; ISSN: 0743-0515

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal; (computer optical disk)

LANGUAGE: English

AB The fabrication of nanoscale surface layers with tunable properties from functionalized macromols. and carbon nanotubes is described. A grafting process was used to fabricate binary polymer layers from poly(Me acrylate) and styrene-2,3,4,5,6-pentafluorostyrene copolymer on a Si wafer, producing thick dense mixed brush layers whose surface exhibits either complete vertical, or a combination of vertical and lateral microphase segregation. The lateral and vertical reorganization of the mixed brush layer was quick (on the order of a few minutes), and reversible for at least 100 switches between good and bad solvent states for each component. Y-shaped brush layers chemical grafted to the silicon surface were also produced, where spatial constraints imposed by a covalent junction of two dissimilar (hydrophobic and hydrophilic) polymer chains in Y-shaped mols. caused formation of micelles with segregated surface structures (pinned and crater-like), which measure only 10 nm in diameter. Ordered arrays of carbon nanotubes in bent and straight states were prepared using wet deposition of nanotube solns. on a patterned surface. Highly oriented and textured nanotube arrays of different types and nanotube loops of different shapes were formed on amine-terminated silicon surface stripes, of interest for electronics applications.

CC 66-5 (Surface Chemistry and Colloids)

Section cross-reference(s): 38, 76

IT Nanotubes

(carbon, patterned surface arrays; fabrication of nanoscale polymer brush mech. tunable surface layers and carbon nanotube arrays)

IT Hydrophilicity

Hydrophobicity

Micelles

Surface structure

Swelling, physical

(fabrication of nanoscale polymer brush mech. tunable surface layers and carbon nanotube arrays)

IT 9003-21-8, Poly(methyl acrylate) 28407-09-2, 2,3,4,5,6-

Pentafluorostyrene-styrene copolymer
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
 (fabrication of nanoscale **polymer brush** mech.
 tunable surface layers and carbon nanotube arrays)

IT 7440-44-0, Carbon, properties
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
 (nanotubes, patterned surface arrays; fabrication of nanoscale **polymer brush** mech. tunable surface layers and carbon nanotube arrays)

IT 7440-21-3, Silicon, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (**substrates**; fabrication of nanoscale **polymer brush** mech. tunable surface layers and carbon nanotube arrays)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 5 OF 54 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2004:228518 HCPLUS
 TITLE: Mixed **polymer brushes** with thermal response amplified by roughness
 AUTHOR(S): Usov, Denys; Nitschke, Mirko; Chitry, Vladimir;
 Ulbrich, Karel; Minko, Sergiy; Stamm, Manfred
 CORPORATE SOURCE: Institut fuer Polymerforschung Dresden, Dresden,
 01069, Germany
 SOURCE: Abstracts of Papers, 227th ACS National Meeting,
 Anaheim, CA, United States, March 28-April 1, 2004
 (2004), PMSE-364. American Chemical Society:
 Washington, D. C.
 CODEN: 69FGKM
 DOCUMENT TYPE: Conference; Meeting Abstract
 LANGUAGE: English
 AB Surface immobilized poly(N-iso-Pr acrylamide) (PNIPAAm) layers show reversible gradual change of water advancing contact angle from **hydrophilic** (<50°) at ambient temperature to **hydrophobic** (90-120°) above 40 °C. The receding water contact angle remains unchanged (about 40°) upon the thermal transition. In this report we describe an approach how to broaden the range of the thermal switching and simultaneously reduce the contact angle hysteresis. We use the concept of mixed **polymer brushes** covalently grafted to a rough **substrate**. The high roughness of the **substrate** amplifies the thermal switching of wettability, while presence of the second **hydrophobic polymer** in the **brush** elevates the receding contact angle and thus reduces the water contact angle hysteresis.

L36 ANSWER 6 OF 54 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2004:223967 HCPLUS
 TITLE: Smart surfaces via surface-initiated **polymer brushes**
 AUTHOR(S): Brown, Andrew A.
 CORPORATE SOURCE: Melville Laboratory - Department of Chemistry,
 University of Cambridge, Cambridge, CB3 1EW, UK
 SOURCE: Abstracts of Papers, 227th ACS National Meeting,
 Anaheim, CA, United States, March 28-April 1, 2004
 (2004), COLL-365. American Chemical Society:
 Washington, D. C.
 CODEN: 69FGKM

DOCUMENT TYPE: Conference; Meeting Abstract
 LANGUAGE: English
 AB **Polymer brushes** have been widely used to tailor surface properties such as wettability, biocompatibility, corrosion resistance and friction. The advantage of **polymer brushes** over other surface modification methods (e.g. self-assembled monolayers) is their mech. and chemical robustness, coupled with a high degree of synthetic flexibility towards the introduction of a variety of functionality. Ideally, the synthetic method to functionalise surfaces with **Polymer brushes**, should allow full control over the thickness, d. and composition of the polymer films, while at the same time be compatible with substrates that are used in polymeric devices. Surface-initiated polymers of **Polymer brushes** (or grafting from method) has been very successful in this controlled growth and a variety of **Polymer brushes** has been grown using different "living" polymerization conditions. Brushes can be grown from planar surfaces or particles, from polymers and from inorg./metallic substrates. **Polymer brushes** can be used to prepare fully protein resistant properties, but by growing 'smart' polymers such as PNIPAM or charged brushes, surfaces with reversible characteristics can be fabricated. Here, we will discuss surfaces which can be switched from hydrophilic to hydrophobic using temperature or pH switches. We will also demonstrate reversible collapse of brushes, as a first step towards using **Polymer brushes** as nanoactuators.

L36 ANSWER 7 OF 54 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2003:930768 HCPLUS
 DOCUMENT NUMBER: 139:396611
 TITLE: Synthesis of functional polymers and block copolymers on silicon oxide surfaces by nitroxide-mediated living radical polymerization in vapor phase
 INVENTOR(S): Chang, Ying Chih; Li, Jun; Chen, Xiaoru
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S. Pat. Appl. Publ., 17 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003219535	A1	20031127	US 2003-360443	20030207
PRIORITY APPLN. INFO.:			US 2002-355733P	P 20020207

AB A method for forming organic thin films comprises: providing a substrate having a surface, covalently pre-immobilizing a derivative of 2,2,6,6-tetramethylpiperidinyloxy (TEMPO) based alkoxylamine containing trimethoxysilyl on the surface of the substrate with the TEMPO group at the free end, and growing a grafted polymer layer in vapor phase on the pre-immobilized surface by means of living radical polymerization. The polymerization of vaporized vinyl monomers, including acrylic acid, styrene, N-2-(hydroxypropyl) methacrylamide and N-iso-Pr acrylamide on silicon wafers is demonstrated. FTIR, ellipsometry and contact angle goniometry were used to characterize the chemical structures, thickness and hydrophilicity of the films. The growth of film is linearly

proportional to its reaction time, leading to the easy and exact control of polymer film thickness from nanometers to submicrons. The capability of polymerizing various monomers allows us to fabricate various functional polymer **brushes**. The reversible thermo-responsiveness of a 200 nm thick grafted poly(NIPAAm) film in aqueous solution is demonstrated with over

50% change in thickness at its lower critical solution temperature. A tri-block copolymer of poly(acrylic acid)-b-polystyrene -b-poly(hydroxypropylmethacrylamide) is successfully synthesized, proving the renewability of TEMPO-mediated polymerization at vapor phase. Surface polymer composition and morphol. is thus controlled at nanoscale by utilizing vapor phase surface-initiated controlled polymerization

IC ICM C23C016-00
 NCL 427255600
 CC 38-2 (Plastics Fabrication and Uses)
 Section cross-reference(s): 76
 ST living radical polymn TEMPO initiator thin film silicon wafer
 IT Polymerization
 (living, radical; synthesis of functional polymers and block copolymers on silicon oxide surfaces by nitroxide-mediated living radical polymerization in vapor phase)
 IT Semiconductor materials
 (substrate; synthesis of functional polymers and block copolymers on silicon oxide surfaces by nitroxide-mediated living radical polymerization in vapor phase)
 IT 2564-83-2D, TEMPO, derivs. 626244-27-7
 RL: CAT (Catalyst use); USES (Uses)
 (synthesis of functional polymers and block copolymers on silicon oxide surfaces by nitroxide-mediated living radical polymerization in vapor phase)
 IT 9003-01-4P, Polyacrylic acid 9003-53-6P, Polystyrene
 25189-55-3P, N-Isopropylacrylamide homopolymer 40704-75-4P,
 N-(2-Hydroxypropyl)methacrylamide homopolymer 626244-28-8P
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (synthesis of functional polymers and block copolymers on silicon oxide surfaces by nitroxide-mediated living radical polymerization in vapor phase)

L36 ANSWER 8 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2003:705833 HCAPLUS
 DOCUMENT NUMBER: 140:112074
 TITLE: Ellipsometric studies of nonionic block copolymers adsorbed at the solid/water and oil/water interfaces
 AUTHOR(S): Kapilashrami, Abha; Malmsten, Martin; Eskilsson, Kristin; Benjamins, Jan-Willem; Nylander, Tommy
 CORPORATE SOURCE: Institute for Surface Chemistry, Stockholm, S-114 86, Swed.
 SOURCE: Colloids and Surfaces, A: Physicochemical and Engineering Aspects (2003), 225(1-3), 181-192
 CODEN: CPEAEH; ISSN: 0927-7757
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB We report on the interfacial behavior of a series of nonionic diblock copolymers at solid hydrophobic and hydrophilic surfaces/water and silicone oil/water interfaces, studied by ellipsometry. The polymers consist of a hydrophobic

C18 chain linked to a hydrophilic poly(ethylene oxide) (PEO), block varying from 50 to 250 U. The adsorption of these copolymers at low bulk concns. was found to be dominated by the PEO block at all interfaces. At higher concentration the copolymer forms surface aggregates at the silica surface whereas we observe a gradual increase in the adsorbed layer thickness with increased surface excess at the solid hydrophobic surface, indicating a transition from a flat conformation to brush-like layer structure. The results indicate a similar evolution in adsorbed amount with concentration at the

silicone oil/water interface as at the hydrophobic silica surface. The influence of the rheol. properties of the interface on the adsorption of the diblock copolymer was investigated by comparing results from two silicon oils with different viscosities. The copolymers were found to have stronger affinity to a low viscosity (990 mPa s) silicone oil than to a higher viscosity (12 800 mPa s) silicone oil and the hydrophobized silica surface. At the silicone oil/water interface the adsorption of a com. nonionic triblock copolymer was furthermore investigated and compared with the diblock copolymers.

CC 37-5 (Plastics Manufacture and Processing)
Section cross-reference(s): 66

IT Adsorption
Interface
Surface
Thickness

(ellipsometric studies of nonionic block copolymers adsorbed at solid/water and oil/water interfaces)

IT 7631-86-9, Silica, uses 9016-00-6, Dimethylsilanediol homopolymer, srn

RL: NUU (Other use, unclassified); USES (Uses)
(ellipsometric studies of nonionic block copolymers adsorbed at solid/water and oil/water interfaces)

REFERENCE COUNT: 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 9 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:623217 HCAPLUS
DOCUMENT NUMBER: 139:292752
TITLE: Y-Shaped Polymer Brushes:
Nanoscale Switchable Surfaces
AUTHOR(S): Julthongpiput, Duangrut; Lin, Yen-Hsi; Teng, Jing;
Zubarev, Eugene R.; Tsukruk, Vladimir V.
CORPORATE SOURCE: Department of Materials Science Engineering, Iowa State University, Ames, IA, 50011, USA
SOURCE: Langmuir (2003), 19(19), 7832-7836
CODEN: LANGD5; ISSN: 0743-7463
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Nanoscale surface structures were observed, of segregated pinned micelles of grafted Y-shaped mols. which undergo reversible structural reorganization. The Y-shaped mols. were designed by combining two highly incompatible, i.e., hydrophobic and hydrophilic polymer chains (arms) attached to a single focal point capable of chemical grafting to a self-assembled monolayer of epoxysilane as functionalized silicon surface. The Y-shaped mols. comprise a polystyrene (PS) arm containing about 40 monomeric units and poly(tert-Bu

acrylate) (PBA) arm containing 30 units and 3,5-dihydroxybenzoic acid is used as AB₂ anchoring moiety on Si to which carboxy-terminated PS and PBA were attached. Spatial constraints induced by the chemical bonding of two dissimilar (**hydrophobic** and **hydrophilic**) polymer arms in such Y-shaped mols. lead to the formation of segregated pinned micellar structures in chemical grafted **brush** layers; post-grafting hydrolysis of the PBA arms was conducted under acidic conditions. The final Y-shaped **brush** layers are composed of amphiphilic mols. with a volume ratio of PS and poly(**acrylic acid**) (PAA) arms of approx. 60:40. A model is proposed, of segregated pinned micelles and corresponding reverse micelles featuring different segregation states of polystyrene and poly(**acrylic acid**) arms. These arms are capable of local reversible rearrangements leading to reversible surface structural reorganization in different solvents.

CC 36-6 (Physical Properties of Synthetic High Polymers)

Section cross-reference(s): 66

ST polystyrene tertbutyl acrylate **polymer Y brush** arm bonding **surface**; silicon epoxysilane self assembled monolayer silicon nanosurface; pinning micelle **hydrophobic hydrophilic** arm dihydroxybenzoic acid

IT Contact angle

Hydrophilicity

Hydrophobicity

Polymer morphology

Self-assembled monolayers

 (Y-shaped **hydrophobic/hydrophilic polymer**

brush micelles anchored on **silicon** forming nanoscale solvent-switchable surfaces)

IT Amphiphiles

Nanostructures

 (Y-shaped layers; Y-shaped **hydrophobic/hydrophilic polymer brush** micelles anchored on **silicon** forming nanoscale solvent-switchable surfaces)

IT Micelles

 (Y-shaped; Y-shaped **hydrophobic/hydrophilic polymer brush** micelles anchored on **silicon** forming nanoscale solvent-switchable surfaces)

IT Polymers, processes

RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

 (graft, **brush**, **surface** anchored; Y-shaped

hydrophobic/hydrophilic polymer

brush micelles anchored on **silicon** forming nanoscale solvent-switchable surfaces)

IT Surface structure

 (superstructure, switchable; Y-shaped **hydrophobic/hydrophilic polymer brush** micelles anchored on **silicon** forming nanoscale solvent-switchable surfaces)

IT Superlattices

 (surface, switchable; Y-shaped **hydrophobic/hydrophilic polymer brush** micelles anchored on **silicon** forming nanoscale solvent-switchable surfaces)

IT 99-10-5D, 3,5-Dihydroxybenzoic acid, reaction products with carboxy-terminated polystyrene and with polyacrylic acid

RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(anchoring compound; Y-shaped hydrophobic/hydrophilic polymer brush micelles anchored on silicon forming nanoscale solvent-switchable surfaces)

IT 7440-21-3D, Silicon, epoxysilane surface compds.
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (anchoring substrate; Y-shaped hydrophobic/hydrophilic polymer brush micelles anchored on silicon forming nanoscale solvent-switchable surfaces)

IT 25232-27-3D, Poly(tert-butyl acrylate), hydrolysis products, carboxy-terminated, reaction products with dihydroxybenzoic acid
 RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (hydrophilic arm in Y-brush micelles; Y-shaped hydrophobic/hydrophilic polymer brush micelles anchored on silicon forming nanoscale solvent-switchable surfaces)

IT 9003-53-6D, Polystyrene, carboxy-terminated, reaction products with dihydroxybenzoic acid
 RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (hydrophobic arm in Y-brush micelles; Y-shaped hydrophobic/hydrophilic polymer brush micelles anchored on silicon forming nanoscale solvent-switchable surfaces)

IT 108-88-3, Toluene, uses 7732-18-5, Water, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (switching solvent; Y-shaped hydrophobic/hydrophilic polymer brush micelles anchored on silicon forming nanoscale solvent-switchable surfaces)

REFERENCE COUNT: 48 THERE ARE 48 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 10 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2003:609949 HCAPLUS
 DOCUMENT NUMBER: 139:146213
 TITLE: Method of immobilizing biologically active molecules for assay purposes in a microfluidic format
 INVENTOR(S): Robotti, Karla
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S. Pat. Appl. Publ., 19 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003148291	A1	20030807	US 2002-72525	20020205
DE 10256931	A1	20030821	DE 2002-10256931	20021205

PRIORITY APPLN. INFO.: US 2002-72525 A 20020205
 AB The invention provides biol. mols. entrapped within a sol-gel matrix and incorporated into a microanal. device for high throughput screening of samples. The pore sizes of the matrix may be chosen to match the size of the entrapped biol. mol. or to correspond in size with the sample mols. to be analyzed. The sol-gel may be formed into structures that can be incorporated into or onto the microanal. devices as microcolumns,

microchannels, and microarrays. The sol-gel may incorporate substituted silanes and thereby provide a **hydrophobic** or **hydrophilic** surface, thereby providing the potential for use in microchromatog., microelectrophoresis or combinations thereof on the microanal. device. A preferred detection method of samples is mass spectrometry. Sol-gel-entrapped trypsin was prepared using HCl, tetra-Me orthosilicate, and trypsin in ammonium bicarbonate buffer, p. 8.1. The entrapped trypsin was stable and active.

IC ICM C12Q001-68
ICS G01N033-53; G01N033-542; G01N033-552
NCL 435006000; 435007900; 436527000
CC 9-16 (Biochemical Methods)
ST **immobilization biomol** sol gel matrix microfluidic assay; trypsin entrapment sol gel tetramethyl orthosilicate
IT Enzymes, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(aldase, **immobilization** of; **immobilizing** biol.
active mols. in sol-gel matrixes for microfluidic assays)
IT **Immobilization, molecular or cellular**
(antibody; **immobilizing** biol. active mols. in sol-gel matrixes for microfluidic assays)
IT Analysis
Analytical apparatus
(biochem.; **immobilizing** biol. active mols. in sol-gel matrixes for microfluidic assays)
IT Oxides (inorganic), reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(colloidal sols; **immobilizing** biol. active mols. in sol-gel matrixes for microfluidic assays)
IT Cell
Membrane, biological
(fragments, **immobilization**; **immobilizing** biol.
active mols. in sol-gel matrixes for microfluidic assays)
IT Peptides, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(hormones, **immobilization**; **immobilizing** biol.
active mols. in sol-gel matrixes for microfluidic assays)
IT Blood-coagulation factors
Cytokines
Enzymes, reactions
Gene
Kinins (animal hormones)
Polynucleotides
Receptors
RL: RCT (Reactant); RACT (Reactant or reagent)
(**immobilization** of; **immobilizing** biol. active mols.
in sol-gel matrixes for microfluidic assays)
IT **Biochemical molecules**
Buffers
Capillary electrophoresis
Films
Fluorometry
High throughput screening
Hydrophilicity
Hydrophobicity
Immobilization, molecular or cellular
Mass spectrometry
Microarray technology
Particles

Raman spectroscopy
Refractive index
Samples
UV and visible spectroscopy
pH
(immobilizing biol. active mols. in sol-gel matrixes for microfluidic assays)

IT Fibers
RL: TEM (Technical or engineered material use); USES (Uses)
(immobilizing biol. active mols. in sol-gel matrixes for microfluidic assays)

IT Etching
Molding
(in fabrication of microanal. device; immobilizing biol. active mols. in sol-gel matrixes for microfluidic assays)

IT Silanes
RL: TEM (Technical or engineered material use); USES (Uses)
(in sol-gel; immobilizing biol. active mols. in sol-gel matrixes for microfluidic assays)

IT Porous materials
(inorg. matrix, biomols. immobilization in; immobilizing biol. active mols. in sol-gel matrixes for microfluidic assays)

IT Proteins
RL: RCT (Reactant); RACT (Reactant or reagent)
(membrane, solubilized, immobilization; immobilizing biol. active mols. in sol-gel matrixes for microfluidic assays)

IT Liquid chromatography
(microchromatog.; immobilizing biol. active mols. in sol-gel matrixes for microfluidic assays)

IT Electrophoresis
(microelectrophoresis; immobilizing biol. active mols. in sol-gel matrixes for microfluidic assays)

IT Fluids
(microfluids; immobilizing biol. active mols. in sol-gel matrixes for microfluidic assays)

IT Lithography
(microllithog., in fabrication of microanal. device; immobilizing biol. active mols. in sol-gel matrixes for microfluidic assays)

IT Silicates, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(mixed with acidified oxide, in sol-gel preparation; immobilizing biol. active mols. in sol-gel matrixes for microfluidic assays)

IT IR spectroscopy
(near-IR; immobilizing biol. active mols. in sol-gel matrixes for microfluidic assays)

IT Pore size
(of matrix; immobilizing biol. active mols. in sol-gel matrixes for microfluidic assays)

IT Hormones, animal, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(peptide, immobilization; immobilizing biol. active mols. in sol-gel matrixes for microfluidic assays)

IT Sol-gel processing
(polymerization; immobilizing biol. active mols. in sol-gel matrixes for microfluidic assays)

IT Micromachining
(silicon, in fabrication of microanal. device; immobilizing

biol. active mols. in sol-gel matrixes for microfluidic assays)

IT Gels
 Sol
 (sol-gel matrix; **immobilizing** biol. active mols. in sol-gel matrixes for microfluidic assays)

IT Polymerization
 (sol-gel; **immobilizing** biol. active mols. in sol-gel matrixes for microfluidic assays)

IT 1066-33-7, Ammonium bicarbonate
 RL: NUU (Other use, unclassified); USES (Uses)
 (buffer; **immobilizing** biol. active mols. in sol-gel matrixes for microfluidic assays)

IT 9000-81-1, Acetylcholinesterase 9000-92-4, Amylase 9000-95-7, Apyrase
 9000-96-8, Arginase 9001-01-8, Kallikrein 9001-03-0, Anhydrase
 9001-05-2, Catalase 9001-08-5, Cholinesterase 9001-42-7, Maltase
 9001-51-8, Hexokinase 9001-54-1, Hyaluronidase 9001-57-4, Invertase
 9001-62-1, Lipase 9001-63-2, Lysozyme 9001-73-4, Papain 9001-75-6,
 Pepsin 9001-99-4, RNase 9002-05-5, Blood coagulation factor, Xa
 9002-06-6, Thymidine kinase 9002-07-7, Trypsin 9002-10-2, Tyrosinase
 9003-98-9, DNase 9003-99-0, Peroxidase 9004-06-2, Elastase
 9004-07-3, Chymotrypsin 9012-54-8, Cellulase 9012-56-0, Amidase
 9013-05-2, Phosphatase 9013-19-8, Isomerase 9013-79-0, Esterase
 9014-01-1, Subtilisin 9015-68-3, Asparaginase 9015-94-5, Renin,
 reactions 9025-26-7, Cathepsin D 9025-70-1, Dextranase 9025-82-5,
 Phosphodiesterase 9026-81-7, Nuclease 9026-93-1, Adenosine deaminase
 9027-05-8, Hydrogenase 9027-30-9, Aspartase 9027-41-2, Hydrolase
 9028-00-6, Clostripain 9031-11-2, Lactase 9031-44-1, Kinase
 9031-55-4, Carboxylase 9031-56-5, Ligase 9031-66-7, Aminotransferase
 9031-94-1, Aminopeptidase 9031-96-3, Peptidase 9031-98-5,
 Carboxypeptidase 9032-68-2, Cathepsin C 9032-75-1, Pectinase
 9032-88-6, Fumarase 9032-92-2, Glycosidase 9033-06-1, Glucosidase
 9035-73-8, Oxidase 9035-82-9, Dehydrogenase 9037-21-2, Tryptophan
 hydroxylase 9037-29-0, Oxygenase 9037-80-3, Reductase 9039-53-6,
 Urokinase 9047-22-7, Cathepsin B 9047-61-4, Transferase 9054-89-1,
 Superoxide dismutase 9055-15-6, Oxidoreductase 9067-84-9, Deaminase
 9068-31-9, Naringinase 9073-78-3, Thermolysin 9075-21-2, Pyroglutamate
 aminopeptidase 37228-64-1, Glucocerebrosidase 39450-01-6, Proteinase K
 55576-49-3, Endoproteinase Asp N 56645-49-9, Cathepsin G 60118-07-2,
 Endorphin 73562-30-8, Acylamino acid releasing enzyme 120178-12-3,
 Telomerase 123175-81-5, Endoproteinase Arg C 123175-82-6,
 Endoproteinase Lys C 137010-42-5 139639-23-9, Tissue plasminogen
 activator 150977-36-9, Bromelain 375798-61-1, Phosphatase,
 phosphoprotein
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (**immobilization of;** **immobilizing** biol. active mols.
 in sol-gel matrixes for microfluidic assays)

IT 7647-01-0, Hydrochloric acid, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (**immobilizing** biol. active mols. in sol-gel matrixes for
 microfluidic assays)

IT 78-10-4, Tetraethyl orthosilicate 681-84-5, Tetramethyl orthosilicate
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (**immobilizing** biol. active mols. in sol-gel matrixes for
 microfluidic assays)

IT 7440-21-3, Silicon, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (micromachining, in fabrication of microanal. device;
immobilizing biol. active mols. in sol-gel matrixes for
 microfluidic assays)

IT 1344-09-8, Sodium silicate
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (mixed with acidified oxide, in sol-gel preparation; immobilizing
 biol. active mols. in sol-gel matrixes for microfluidic assays)

IT 9001-92-7, Protease
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (protease, immobilization of; immobilizing biol.
 active mols. in sol-gel matrixes for microfluidic assays)

L36 ANSWER 11 OF 54 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2003:457094 HCPLUS
 DOCUMENT NUMBER: 140:164588
 TITLE: Block copolymer brushes as materials for producing
 surfaces with smart adhesion behavior
 AUTHOR(S): Viswanathan, Kalpana; Williamson, David T.; Elkins,
 Casey L.; Long, Timothy E.; Ward, Thomas C.
 CORPORATE SOURCE: Department of Chemistry, Virginia Polytechnic
 Institute and State University, Blacksburg, VA, 24061,
 USA
 SOURCE: Proceedings of the Annual Meeting of the Adhesion
 Society (2003), 26th, 161-163
 CODEN: PAMSFE; ISSN: 1086-9506

PUBLISHER: Adhesion Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Central functionalized asym. triblock copolymers were used to generate
 surfaces that can exhibit reversible wetting properties promoted by
 external stimulus aided conformational rearrangements of the polymer
 chains, and compared with a series of polystyrene. Initial studies on
 hydroxyethyl-terminated poly(1,3-cyclohexadiene) (PCHD) as well as
 hydroxyl- and triethoxysilyl-terminated polystyrene are presented. The
 scanning electron micrograph of the PCHD coated surfaces showed that the
 polymer dewetted the silicon surface on annealing and most of it was
 washed off during solvent extraction. Hydroxyl terminated PCHD and polystyrene
 were unstable under demanding conditions, which necessitates the use of
 chemical grafting techniques for forming the brush. A series of polystyrene
 failed to show good adhesion to silicon surfaces. This behavior of the
 hydrophilic surface could be reversed by modifying the surface
 with polymer brushes to display favorable interaction
 with such hydrophobic polymers.

CC 37-5 (Plastics Manufacture and Processing)

IT 7440-21-3, Silicon, properties

RL: PRP (Properties)
 (substrate; adhesion of hydroxyl-terminated
 poly(cyclohexadiene) and polystyrene on silicon)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 12 OF 54 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2003:282035 HCPLUS
 DOCUMENT NUMBER: 138:300113
 TITLE: Label-free methods for performing assays using a
 colorimetric resonant reflectance optical biosensor
 INVENTOR(S): Lin, Bo; Pepper, Jane; Cunningham, Brian T.;
 Gerstenmaier, John; Li, Peter; Qiu, Jean; Pien, Homer
 PATENT ASSIGNEE(S): SRU Biosystems LLC, USA
 SOURCE: U.S. Pat. Appl. Publ., 65 pp., Cont.-in-part of U.S.
 Ser. No. 227,908.
 CODEN: USXXCO

DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 15
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003068657	A1	20030410	US 2002-237641	20020909
US 2002127565	A1	20020912	US 2001-930352	20010815
US 2003210396	A1	20031113	US 2001-1069	20011030
US 2003027327	A1	20030206	US 2002-58626	20020128
US 2003027328	A1	20030206	US 2002-59060	20020128
US 2003032039	A1	20030213	US 2002-180647	20020626
US 2003059855	A1	20030327	US 2002-180374	20020626
US 2003113766	A1	20030619	US 2002-227908	20020826
US 2004132214	A1	20040708	US 2003-667696	20030922
PRIORITY APPLN. INFO.:			US 2000-244312P	P 20001030
			US 2001-283314P	P 20010412
			US 2001-303028P	P 20010703
			US 2001-930352	A2 20010815
			US 2002-58626	A2 20020128
			US 2002-59060	A2 20020128
			US 2002-180374	A2 20020626
			US 2002-180647	A2 20020626
			US 2002-227908	A2 20020826
			US 2001-310399P	P 20010806
			JP 2001-299942	A 20010928
			US 2002-52626	A2 20020117
			US 2002-237641	A2 20020909

AB Methods are provided for detecting biomol. interactions. The use of labels is not required and the methods can be performed in a high-throughput manner. The invention also relates to optical devices. Biosensors were used to detect protein-protein interactions, DNA-DNA interactions, protein-DNA interactions, growth of cells, interleukin 1 release from macrophages, etc.

IC ICM G01N033-53
 ICS G01N033-542; C12M001-34

NCL 435007900; 435287200

CC 9-1 (Biochemical Methods)
 Section cross-reference(s): 3, 6, 15

IT Functional groups
 (acidic groups, specific binding substance immobilization onto surface of biosensor via; label-free methods for performing assays using colorimetric resonant reflectance optical biosensors)

IT Functional groups
 (alkoxycarbonyl groups, specific binding substance immobilization onto surface of biosensor via; label-free methods for performing assays using colorimetric resonant reflectance optical biosensors)

IT Molecular association
 (biomol., detection of; label-free methods for performing assays using colorimetric resonant reflectance optical biosensors)

IT Chemisorption
 (electrochem., specific binding substance immobilization onto surface of biosensor by; label-free methods for performing assays using colorimetric resonant reflectance optical biosensors)

IT Functional groups
 (ether groups, specific binding substance immobilization onto surface of biosensor via; label-free methods for performing assays

using colorimetric resonant reflectance optical biosensors)

IT **Glass substrates**
(for biosensor; label-free methods for performing assays using colorimetric resonant reflectance optical biosensors)

IT **Bond**
(**hydrophilic**, specific binding substance immobilization onto surface of biosensor by; label-free methods for performing assays using colorimetric resonant reflectance optical biosensors)

IT **Bond**
(**hydrophobic**, specific binding substance immobilization onto surface of biosensor by; label-free methods for performing assays using colorimetric resonant reflectance optical biosensors)

IT **Antibodies and Immunoglobulins**
RL: ARG (Analytical reagent use); BSU (Biological study, unclassified); DEV (Device component use); TEM (Technical or engineered material use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(immobilized; label-free methods for performing assays using colorimetric resonant reflectance optical biosensors)

IT **Bond**
(ionic, specific binding substance immobilization onto surface of biosensor by; label-free methods for performing assays using colorimetric resonant reflectance optical biosensors)

IT **Biochemical molecules**

Blood analysis

Cell

Combinatorial library

Eubacteria

High throughput screening

Human

Hydrogels

Immunoassay

Nucleic acid hybridization

Protein microarray technology

Virus
(label-free methods for performing assays using colorimetric resonant reflectance optical biosensors)

IT **Immobilization, molecular or cellular**
(of specific binding substance onto surface of biosensor; label-free methods for performing assays using colorimetric resonant reflectance optical biosensors)

IT **Adsorption**

Chemisorption
(specific binding substance immobilization onto surface of biosensor by; label-free methods for performing assays using colorimetric resonant reflectance optical biosensors)

IT **Alkyl groups**

Amide group

Amino group

Aryl groups

Carbonyl group

Cyano group

Formyl group

Hydroxyl group

Phosphate group

Sulphydryl group
(specific binding substance immobilization onto surface of biosensor via; label-free methods for performing assays using

colorimetric resonant reflectance optical biosensors)
IT Alkenes, analysis
Alkynes
Amino acids, analysis
Carbohydrates, analysis
Lipids, analysis
Phospholipids, analysis
Steroids, analysis
RL: ARU (Analytical role, unclassified); DEV (Device component use); RCT (Reactant); TEM (Technical or engineered material use); ANST (Analytical study); RACT (Reactant or reagent); USES (Uses)
(specific binding substance **immobilization** onto surface of biosensor via; label-free methods for performing assays using colorimetric resonant reflectance optical biosensors)
IT 919-30-2, 3-Aminopropyltriethoxsilane
RL: DEV (Device component use); RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(glass substrate coating with; label-free methods for performing assays using colorimetric resonant reflectance optical biosensors)
IT 443965-78-4
RL: ARG (Analytical reagent use); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent); USES (Uses)
(**immobilization** of, for caspase 3 inhibitor assay; label-free methods for performing assays using colorimetric resonant reflectance optical biosensors)
IT 183613-14-1
RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(**immobilization** of, to prevent nonspecific binding of proteins to biosensor; label-free methods for performing assays using colorimetric resonant reflectance optical biosensors)
IT 207400-85-9
RL: ARG (Analytical reagent use); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent); USES (Uses)
(**immobilization** of; label-free methods for performing assays using colorimetric resonant reflectance optical biosensors)
IT 9013-20-1D, Streptavidin, complexes with biosensor-**immobilized** biotin
RL: ARG (Analytical reagent use); BSU (Biological study, unclassified); DEV (Device component use); TEM (Technical or engineered material use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(label-free methods for performing assays using colorimetric resonant reflectance optical biosensors)
IT 9003-53-6, Polystyrene
RL: DEV (Device component use); RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(microtiter plate **substrate**; label-free methods for performing assays using colorimetric resonant reflectance optical biosensors)
IT 7440-02-0D, Nickel, group
RL: ARU (Analytical role, unclassified); DEV (Device component use); RCT (Reactant); TEM (Technical or engineered material use); ANST (Analytical study); RACT (Reactant or reagent); USES (Uses)
(specific binding substance **immobilization** onto surface of biosensor via; label-free methods for performing assays using colorimetric resonant reflectance optical biosensors)

ACCESSION NUMBER: 2003:221926 HCPLUS
 DOCUMENT NUMBER: 138:251070
 TITLE: Device with chemical surface patterns
 INVENTOR(S): Textor, Marcus; Michel, Roger; Voeroes, Janos;
 Hubbell, Jeffrey A.; Lussi, Jost
 PATENT ASSIGNEE(S): Eidgenoessische Technische Hochschule Zuerich, Switz.
 SOURCE: PCT Int. Appl., 69 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003023401	A1	20030320	WO 2001-CH548	20010912
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1425583	A1	20040609	EP 2001-960055	20010912
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				

PRIORITY APPLN. INFO.: WO 2001-CH548 W 20010912
 AB The invention concerns a device with chemical surface patterns (defined surface areas of at least two different chemical compns.) with biochem. or biol. relevance on substrates with prefabricated patterns of at least two different types of regions (α , β ,...), whereas at least two different, consecutively applied mol. self-assembly systems (A, B,...) are used in a way that at least one of the applied assembly systems (A or B or...) is specific to one type of the prefabricated patterns (α or β or...). A silicon wafer was coated with TiO₂ followed by SiO₂ and a pattern of 5 X 5 squares of TiO₂ was etched through the SiO₂ layer. The patterned surface was dipped in aqueous ammonium dodecyl phosphate for self-assembly of DDP on top of the TiO₂ areas, rendering these areas highly hydrophobic. The surface was dipped in an aqueous solution of poly(L-lysine)-g-poly(ethylene glycol) (PLL-g-PEG) to selectively adsorbed to the SiO₂ regions. Texas Red-streptavidin selectively adsorbed to the PLL-g-PEG coating.
 IC ICM G01N033-543
 ICS A61L029-08; A61L027-34; A61L031-10; A61L027-28
 CC 9-1 (Biochemical Methods)
 ST device surface pattern biochem substrate prepattern; self assembly dodecyl phosphate titanium oxide; polylysine PEG selective adsorption silicon oxide; protein selective adsorption patterned surface
 IT Prion proteins
 RL: ANT (Analyte); DGN (Diagnostic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
 (PrPSc; device with chemical surface patterns with biochms. on substrates with prefabricated patterns)
 IT Animal tissue
 Body fluid
 Egg yolk

Lymph
Plant tissue
Waters
(anal. of; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Nucleic acids
RL: ANT (Analyte); ARG (Analytical reagent use); BSU (Biological study, unclassified); DEV (Device component use); TEM (Technical or engineered material use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(analog; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Joint, anatomical
(ankle, artificial; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Joint, anatomical
(artificial, components; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Hip
(artificial; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Radioactive substances
(as labels; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Analytical apparatus
(biochem.; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Chemicals
(biochems.; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Integrins
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(biomedical device with cell adhesion patterns interacting with; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Polymers, reactions
RL: DEV (Device component use); RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(block, diblock, self-assembly on prepatterned surfaces; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Polymers, reactions
RL: DEV (Device component use); RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(block, self-assembly on prepatterned surfaces; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Medical goods
(bone cements, endoprosthesis used in combination with; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Prosthetic materials and Prosthetics
(cardiovascular implants; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Medical goods
(catheters; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Polyelectrolytes
(cationic, copolymers, selective assembly on prepatterned surfaces;

device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Epithelium
(cells of, in biomedical device; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Polymers, reactions
RL: DEV (Device component use); RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(co-, polycationic, selective assembly on prepatterned surfaces; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Metals, uses
RL: ARG (Analytical reagent use); DEV (Device component use); TEM (Technical or engineered material use); ANST (Analytical study); USES (Uses)
(colloids, as labels; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Albumins, biological studies
RL: BSU (Biological study, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process)
(conjugates with Oregon Green, selective adsorption on patterned silicon wafer; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Adsorption
Desorption
(detection of change in refractive index due to; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Refractive index
(detection of change in; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Eubacteria
Pathogen
Salmonella
(determination of; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Adhesion, biological
Agrochemicals
Animal
Animal tissue culture
Apparatus
Aptamers
Bioassay
Biosensors
Blood analysis
Cell
Cell differentiation
Cell morphology
Cell proliferation
Chelating agents
Combinatorial chemistry
Cytoskeleton
Diagnosis
Diffraction gratings
Drug screening
Environmental analysis
Evanescence wave
Fluorescence microscopy

Food analysis
Human
 Immobilization, molecular or cellular
 Luminescent substances
 Medical goods
 Molecular association
 Optical waveguides
 Pharmaceutical analysis
 Plant analysis
 Soil analysis
 Spin labels
 Surface
 Urine analysis
 Veterinary medicine
 (device with chemical surface patterns with biochems. on
 substrates with prefabricated patterns)

IT Agglutinins and Lectins
 Antibodies and Immunoglobulins
 Antigens
 DNA
 Enzymes, analysis
 Glycopeptides
 Nucleic acids
 Oligonucleotides
 Oligosaccharides, analysis
 Peptide nucleic acids
 Polynucleotides
 RNA
 RL: ANT (Analyte); ARG (Analytical reagent use); BSU (Biological study, unclassified); DEV (Device component use); TEM (Technical or engineered material use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
 (device with chemical surface patterns with biochems. on
 substrates with prefabricated patterns)

IT Ligands
 RL: ANT (Analyte); ARG (Analytical reagent use); DEV (Device component use); TEM (Technical or engineered material use); ANST (Analytical study); USES (Uses)
 (device with chemical surface patterns with biochems. on
 substrates with prefabricated patterns)

IT Proteins
 RL: ANT (Analyte); BSU (Biological study, unclassified); MSC (Miscellaneous); ANST (Analytical study); BIOL (Biological study)
 (device with chemical surface patterns with biochems. on
 substrates with prefabricated patterns)

IT Acrylic polymers, uses
 Glass, uses
 Polycarbonates, uses
 Polyimides, uses
 Silicates, uses
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (device with chemical surface patterns with biochems. on
 substrates with prefabricated patterns)

IT Blood vessel
 (devices; device with chemical surface patterns with biochems. on
 substrates with prefabricated patterns)

IT Luminescent substances
 (dyes, as label; device with chemical surface patterns with biochems. on

- IT substrates with prefabricated patterns)
- IT Joint, anatomical
 - (elbow, artificial; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Prosthetic materials and Prosthetics
 - (endoprosthetic; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Blood vessel
 - (endothelium, cells of, in biomedical device; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Extracellular matrix
 - (expression of factors to; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Hand
 - (finger, artificial; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Bone, disease
 - (fracture, prosthetics for fixing; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Antibodies and Immunoglobulins
 - RL: ARG (Analytical reagent use); BSU (Biological study, unclassified); DEV (Device component use); TEM (Technical or engineered material use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
 - (fragments; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Polymers, reactions
 - RL: DEV (Device component use); RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
 - (graft, with PEG, selective coating on prepatterned surfaces by electrostatic interactions at specific pH; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Polyoxyalkylenes, reactions
 - RL: DEV (Device component use); RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
 - (grafted polymers, selective coating on prepatterned surfaces by electrostatic interactions at specific pH; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Cell membrane
 - (immobilized peptide or protein interacting with receptors in; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Receptors
 - RL: BSU (Biological study, unclassified); BIOL (Biological study)
 - (immobilized peptide or protein interacting with, in cell membranes; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Peptides, biological studies
 - Proteins
 - RL: ARG (Analytical reagent use); BSU (Biological study, unclassified); DEV (Device component use); TEM (Technical or engineered material use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
 - (immobilized; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Dental materials and appliances
 - Prosthetic materials and Prosthetics
 - (implants; device with chemical surface patterns with biochems. on

- IT substrates with prefabricated patterns)
- IT Fibroblast
- IT Macrophage
- IT Osteoblast
- IT Osteoclast
 - (in biomedical device; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT pH
 - (in selective coating of PEG-grafted polymers on prepatterned surfaces by electrostatic interactions; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Joint, anatomical
 - (knee, artificial; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT ESR (electron spin resonance)
- IT NMR spectroscopy
 - (labels for; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Mass
 - (labels; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Materials
 - (layered; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Dyes
 - (luminescent, as label; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Prosthetic materials and Prosthetics
 - (maxillofacial; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Plastics, uses
 - RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 - (moldable; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Antibodies and Immunoglobulins
 - RL: ARG (Analytical reagent use); BSU (Biological study, unclassified); DEV (Device component use); TEM (Technical or engineered material use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
 - (monoclonal; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Fasteners
 - (nails; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Nerve
 - (neuron, in biomedical device; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Biochemical molecules
 - (nonspecific adsorption of; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Self-assembly
 - (of alkane phosphates or alkane phosphonates on prepatterned surfaces; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Hydrophilicity
- IT Hydrophobicity
 - (of areas of prepatterned surfaces; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)
- IT Isoelectric point

(of oxide, nitride, or carbide areas; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Stem cell
(osteogeneic, in biomedical device; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Plates

Screws
(osteosynthesis; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Self-assembled monolayers
(patterns of; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Carbides

Nitrides

Oxides (inorganic), reactions

Transition metal oxides

RL: DEV (Device component use); RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(phosphate- or phosphonate-interacting prefabricated patterns of; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Medical goods
(pins; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Cell
(polynuclear, patterns of adsorbed macrophages on biomed. device not nucleating into; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Bone formation
(precursor cells, in biomedical device; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Adsorption
(protein, nonspecific; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Affinity
(screening; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Electrostatic deposition
(selective, of PEG-grafted polymers on prepatterned surfaces; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Phosphates, reactions
RL: DEV (Device component use); RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(self-assembly on prepatterned surfaces; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Surface plasmon
(sensor; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Joint, anatomical
(shoulder, artificial; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Muscle
(smooth, cells of, in biomedical device; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Medical goods
(stents; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Organelle
(stress fiber, formation of; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Toxicity
(studies of; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Ceramics
Composites
(substrate of; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Alloys, uses
Polymers, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(substrate of; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Spinal column
(surgery device; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Plastics, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(thermoplastics; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Silylation
(to make hydrophobic areas; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Heart
(valve, artificial; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT Joint, anatomical
(wrist, artificial; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT 9005-49-6, Heparin, biological studies
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(biomedical device with cell adhesion patterns interacting with; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT 7365-45-9, HEPES
RL: NUU (Other use, unclassified); USES (Uses)
(buffer; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT 58-85-5D, Biotin, conjugates
RL: ARG (Analytical reagent use); BSU (Biological study, unclassified);
DEV (Device component use); TEM (Technical or engineered material use);
ANST (Analytical study); BIOL (Biological study); USES (Uses)
(device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT 199869-49-3D, ethoxylated polylysine derivs.
RL: ARU (Analytical role, unclassified); DEV (Device component use); RCT (Reactant); TEM (Technical or engineered material use); ANST (Analytical study); RACT (Reactant or reagent); USES (Uses)
(device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT 9013-20-1, Streptavidin

RL: BSU (Biological study, unclassified); BIOL (Biological study)
 (device with chemical surface patterns with biochems. on
 substrates with prefabricated patterns)

IT 1314-13-2, Zinc oxide, reactions 12055-23-1, Hafnium oxide (HfO₂)
 RL: DEV (Device component use); RCT (Reactant); TEM (Technical or
 engineered material use); RACT (Reactant or reagent); USES (Uses)
 (device with chemical surface patterns with biochems. on
 substrates with prefabricated patterns)

IT 9003-53-6, Polystyrene 9011-14-7, Polymethylmethacrylate
 RL: DEV (Device component use); TEM (Technical or engineered material
 use); USES (Uses)
 (device with chemical surface patterns with biochems. on
 substrates with prefabricated patterns)

IT 151754-91-5
 RL: ARU (Analytical role, unclassified); DEV (Device component use); TEM
 (Technical or engineered material use); ANST (Analytical study); USES
 (Uses)
 (for blocking protein binding to silicon dioxide regions of silicon
 wafer; device with chemical surface patterns with biochems. on
 substrates with prefabricated patterns)

IT 7440-22-4, Silver, uses 7440-57-5, Gold, uses 14808-60-7, Quartz, uses
 RL: DEV (Device component use); TEM (Technical or engineered material
 use); USES (Uses)
 (in bioanal. sensing platform; device with chemical surface patterns with
 biochems. on substrates with prefabricated patterns)

IT 99896-85-2D, immobilized 123063-31-0D, immobilized
 134580-64-6D, immobilized 193613-75-1D, immobilized
 359878-44-7D, immobilized 393153-52-1D, immobilized
 502453-68-1D, immobilized 502453-69-2D, immobilized
 502453-70-5D, immobilized 502453-71-6D, immobilized
 502453-72-7D, immobilized 502453-73-8D, immobilized
 502453-74-9D, immobilized 502453-75-0D, immobilized
 502453-76-1D, immobilized 502453-77-2D, immobilized
 502453-78-3D, immobilized 502453-79-4D, immobilized
 502453-80-7D, immobilized 502453-81-8D, immobilized
 502453-82-9D, immobilized 502453-83-0D, immobilized
 502453-84-1D, immobilized 502453-85-2D, immobilized
 502453-86-3D, immobilized 502453-87-4D, immobilized
 502453-88-5D, immobilized 502453-89-6D, immobilized
 502453-90-9D, immobilized 502453-91-0D, immobilized
 502453-92-1D, immobilized 502453-93-2D, immobilized
 502453-94-3D, immobilized 502453-95-4D, immobilized
 502453-96-5D, immobilized 502453-97-6D, immobilized
 502453-98-7D, immobilized 502453-99-8D, immobilized
 502454-00-4D, immobilized 502454-01-5D, immobilized
 502454-02-6D, immobilized 502454-03-7D, immobilized
 502454-04-8D, immobilized 502454-05-9D, immobilized
 502454-06-0D, immobilized 502454-07-1D, immobilized
 502454-08-2D, immobilized 502454-09-3D, immobilized
 502454-10-6D, immobilized 502454-11-7D, immobilized
 502454-12-8D, immobilized 502454-13-9D, immobilized
 502454-14-0D, immobilized 502454-15-1D, immobilized
 502454-16-2D, immobilized 502454-17-3D, immobilized
 502454-18-4D, immobilized 502454-19-5D, immobilized
 502454-20-8D, immobilized 502454-21-9D, immobilized
 502454-22-0D, immobilized 502454-23-1D, immobilized
 502454-24-2D, immobilized 502454-25-3D, immobilized
 502454-26-4D, immobilized 502454-27-5D, immobilized
 502454-28-6D, immobilized 502454-29-7D, immobilized

502454-30-0D, immobilized
 502454-32-2D, immobilized
 502454-34-4D, immobilized
 502454-36-6D, immobilized
 502454-38-8D, immobilized
 502454-40-2D, immobilized
 502454-42-4D, immobilized
 502454-44-6D, immobilized
 502454-46-8D, immobilized
 502454-48-0D, immobilized
 502454-50-4D, immobilized
 502454-52-6D, immobilized
 502454-54-8D, immobilized
 502454-56-0D, immobilized
 502454-58-2D, immobilized
 502454-60-6D, immobilized
 502454-62-8D, immobilized
 502454-64-0D, immobilized
 502454-66-2D, immobilized
 502454-68-4D, immobilized
 502454-70-8D, immobilized
 502454-72-0D, immobilized
 502454-74-2D, immobilized
 502454-76-4D, immobilized
 502454-78-6D, immobilized
 502454-80-0D, immobilized
 502454-31-1D, immobilized
 502454-33-3D, immobilized
 502454-35-5D, immobilized
 502454-37-7D, immobilized
 502454-39-9D, immobilized
 502454-41-3D, immobilized
 502454-43-5D, immobilized
 502454-45-7D, immobilized
 502454-47-9D, immobilized
 502454-49-1D, immobilized
 502454-51-5D, immobilized
 502454-53-7D, immobilized
 502454-55-9D, immobilized
 502454-57-1D, immobilized
 502454-59-3D, immobilized
 502454-61-7D, immobilized
 502454-63-9D, immobilized
 502454-65-1D, immobilized
 502454-67-3D, immobilized
 502454-69-5D, immobilized
 502454-71-9D, immobilized
 502454-73-1D, immobilized
 502454-75-3D, immobilized
 502454-77-5D, immobilized
 502454-79-7D, immobilized
 502454-81-1D, immobilized

RL: BSU (Biological study, unclassified); DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); BIOL (Biological study); USES (Uses)

(in patterns in biomed. device; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT 1313-96-8, Niobium oxide 1314-23-4, Zirconium oxide, reactions

1314-61-0, Tantalum oxide 13463-67-7, Titanium oxide, reactions

RL: DEV (Device component use); RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)

(phosphate- or phosphonate-interacting prefabricated patterns of; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT 7631-86-9, Silicon oxide, uses

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(prefabricated patterns of; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT 195136-58-4D, conjugates with albumin

RL: BSU (Biological study, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process)

(selective adsorption on patterned silicon wafer; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT 9013-20-1D, Streptavidin, conjugates with Texas Red 82354-19-6D, Texas Red, conjugates with streptavidin

RL: BSU (Biological study, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); RCT (Reactant); BIOL (Biological study); PROC (Process); RACT (Reactant or reagent)

(selective adsorption on patterned silicon wafer; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT 25322-68-3D, Polyethylene glycol, grafted polymers

RL: DEV (Device component use); RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses) (selective coating on prepatterned surfaces by electrostatic interactions at specific pH; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT 106392-12-5D, di- or multi-block
 RL: DEV (Device component use); RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses) (self-assembly on prepatterned surfaces, protein resistance to hydrophobic surfaces in relation to; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT 15477-76-6D, Phosphonate, alkane
 RL: DEV (Device component use); RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses) (self-assembly on prepatterned surfaces; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT 65138-75-2, Ammonium dodecyl phosphate
 RL: DEV (Device component use); RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses) (self-assembly on titanium oxide regions of silicon wafer; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

IT 7440-21-3, Silicon, reactions
 RL: DEV (Device component use); RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses) (wafer as substrate; device with chemical surface patterns with biochems. on substrates with prefabricated patterns)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 14 OF 54 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2003:118476 HCPLUS
 DOCUMENT NUMBER: 138:149902
 TITLE: Latex based adsorbent chip and its preparation and use in (bio)assays
 INVENTOR(S): Pohl, Christopher A.; Papanu, Steven C.
 PATENT ASSIGNEE(S): Ciphergen Biosystems, Inc., USA
 SOURCE: U.S. Pat. Appl. Publ., 39 pp., Cont.-in-part of U. S. Ser. No. 908,518.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003032043	A1	20030213	US 2002-197115	20020716
US 2003017464	A1	20030123	US 2001-908518	20010717
PRIORITY APPLN. INFO.:			US 2001-908518	A2 20010717
			US 2002-383008P	P 20020523

AB The present invention provides an adsorbent chip, which includes three components, a substrate, an intermediate layer of linker arms and an adsorbent film, which is attached to the linker arms. The adsorbent film is made up of a plurality of adsorbent particles, each of which includes a binding functionality. The invention also provides a method of making the chips of the invention in which the substrate

-intermediate film cassette is formed and the adsorbent film is subsequently **immobilized** thereon. When the adsorbent film is from the same preparation across a particular batch of chips, the chips provide for the acquisition of data that are highly reproducible from one chip to the next throughout the particular batch of chips. Addnl., the invention provides methods for using the chips to perform assays.

IC ICM C12Q001-68
ICS G01N033-53; G01N033-542; C12M001-34

NCL 435006000; 435007900; 435287200

CC 9-1 (Biochemical Methods)

Section cross-reference(s): 79, 80

IT Electric charge
Hydrophobicity
Polarity
(as binding function on adsorbent particle film; latex based adsorbent chip and its preparation and use in (bio)assays)

IT Amino group
Biochemical molecules
Chelating agents
Drugs
Functional groups
(as binding groups on adsorbent film; latex based adsorbent chip and its preparation and use in (bio)assays)

IT Plastics, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(as **substrate**; latex based adsorbent chip and its preparation and use in (bio)assays)

IT Polymers, reactions
RL: DEV (Device component use); RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(**brush**, in intermediate layer; latex based adsorbent chip and its preparation and use in (bio)assays)

IT Inorganic compounds
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(crystals, **substrates**; latex based adsorbent chip and its preparation and use in (bio)assays)

IT Hydrogen bond
Hydrophilicity
Hydrophobic force
Van der Waals force
(in analyte interaction with adsorbent film; latex based adsorbent chip and its preparation and use in (bio)assays)

IT Crystals
(inorg., **substrates**; latex based adsorbent chip and its preparation and use in (bio)assays)

IT Glass, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(inorg., **substrates**; latex based adsorbent chip and its preparation and use in (bio)assays)

IT Adsorbents
Bioassay
Fluorometry
Glass substrates
Latex
Microarray technology
(latex based adsorbent chip and its preparation and use in (bio)assays)

IT Immobilization, molecular or cellular
 (of adsorbent film; latex based adsorbent chip and its preparation and use
 in (bio)assays)

IT Electric conductors
 Electric insulators
 Semiconductor materials
 (substrates; latex based adsorbent chip and its preparation and
 use in (bio)assays)

IT Oxides (inorganic), uses
 RL: DEV (Device component use); TEM (Technical or engineered material
 use); USES (Uses)
 (substrates; latex based adsorbent chip and its preparation and
 use in (bio)assays)

IT 7631-86-9, Silicon dioxide, reactions
 RL: DEV (Device component use); RCT (Reactant); TEM (Technical or
 engineered material use); RACT (Reactant or reagent); USES (Uses)
 (on aluminum substrate; latex based adsorbent chip and its
 preparation and use in (bio)assays)

IT 7429-90-5, Aluminum, uses
 RL: DEV (Device component use); TEM (Technical or engineered material
 use); USES (Uses)
 (substrate; latex based adsorbent chip and its preparation and use
 in (bio)assays)

L36 ANSWER 15 OF 54 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2003:58690 HCPLUS
 DOCUMENT NUMBER: 138:103248
 TITLE: Latex based adsorbent chip and its preparation and use
 in (bio)assays
 INVENTOR(S): Pohl, Christopher A.
 PATENT ASSIGNEE(S): Ciphergen Biosystems, Inc., USA
 SOURCE: U.S. Pat. Appl. Publ., 38 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003017464	A1	20030123	US 2001-908518	20010717
US 2003032043	A1	20030213	US 2002-197115	20020716
WO 2003079402	A2	20030925	WO 2002-US22611	20020716
WO 2003079402	A3	20040527		
			W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG	
EP 1483794	A2	20041208	EP 2002-807074	20020716
			R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK	
PRIORITY APPLN. INFO.:			US 2001-908518	A2 20010717
			US 2002-383008P	P 20020523

WO 2002-US22611 W 20020716

AB The present invention provides an adsorbent chip, which includes three components, a **substrate**, an intermediate layer of linker arms and an adsorbent film, which is attached to the linker arms. The adsorbent film is made up of a plurality of adsorbent particles, each of which includes a binding functionality. The invention also provides a method of making the chips of the invention in which the **substrate**-intermediate film cassette is formed and the adsorbent film is subsequently **immobilized** thereon. When the adsorbent film is from the same preparation across a particular batch of chips, the chips provide for the acquisition of data that are highly reproducible from one chip to the next throughout the particular batch of chips. Addnl., the invention provides methods for using the chips to perform assays.

IC ICM C12Q001-68
ICS G01N033-53; G01N033-542; C12M001-34

NCL 435006000; 435007900; 435287200

CC 9-1 (Biochemical Methods)
Section cross-reference(s): 79, 80

IT Electric charge
Hydrophobicity
Polarity
(as binding function on adsorbent particle film; latex based adsorbent chip and its preparation and use in (bio)assays)

IT Amino group
Biochemical molecules
Chelating agents
Drugs
Functional groups
(as binding groups on adsorbent film; latex based adsorbent chip and its preparation and use in (bio)assays)

IT Plastics, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(as **substrate**; latex based adsorbent chip and its preparation and use in (bio)assays)

IT Polymers, reactions
RL: DEV (Device component use); RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(**brush**, in intermediate layer; latex based adsorbent chip and its preparation and use in (bio)assays)

IT Inorganic compounds
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(crystals, **substrates**; latex based adsorbent chip and its preparation and use in (bio)assays)

IT Hydrogen bond
Hydrophilicity
Hydrophobic force
Van der Waals force
(in analyte interaction with adsorbent film; latex based adsorbent chip and its preparation and use in (bio)assays)

IT Crystals
(inorg., **substrates**; latex based adsorbent chip and its preparation and use in (bio)assays)

IT Glass, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(inorg., **substrates**; latex based adsorbent chip and its preparation and use in (bio)assays)

IT Adsorbents
 Bioassay
 Fluorometry
 Glass substrates
 Latex
 Microarray technology
 (latex based adsorbent chip and its preparation and use in (bio)assays)

IT Immobilization, molecular or cellular
 (of adsorbent film; latex based adsorbent chip and its preparation and use in (bio)assays)

IT Electric conductors
 Electric insulators
 Semiconductor materials
 (substrates; latex based adsorbent chip and its preparation and use in (bio)assays)

IT Oxides (inorganic), uses
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (substrates; latex based adsorbent chip and its preparation and use in (bio)assays)

IT 7631-86-9, Silicon dioxide, reactions
 RL: DEV (Device component use); RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
 (on aluminum substrate; latex based adsorbent chip and its preparation and use in (bio)assays)

IT 7429-90-5, Aluminum, uses
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (substrate; latex based adsorbent chip and its preparation and use in (bio)assays)

L36 ANSWER 16 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:23335 HCAPLUS
 DOCUMENT NUMBER: 138:52324
 TITLE: Pipette tips for study of biomolecules
 INVENTOR(S): Creasey, Andrew
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S. Pat. Appl. Publ., 9 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003007897	A1	20030109	US 2001-899027	20010706
WO 2003004164	A1	20030116	WO 2002-US21068	20020703
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				

PRIORITY APPLN. INFO.: US 2001-899027 A 20010706
AB The invention provides pipet tips having high affinity for target biomols. and methods of using the pipet tips for separating, filtering, and purifying samples, preparing samples, culturing cells, and running assays.
IC ICM B01L003-02
NCL 422100000; 073864010
CC 9-1 (Biochemical Methods)
IT Chromatography
(Chiral, materials; pipet tips for study of biomols.)
IT Chromatography
(Hydrophilic, material; pipet tips for study of biomols.)
IT Chromatography
(Hydrophobic, material; pipet tips for study of biomols.)
IT Glass, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(controlled pore; pipet tips for study of biomols.)
IT Affinity chromatography
Chromatography
Ion exchange chromatography
Size-exclusion chromatography
(material; pipet tips for study of biomols.)
IT Affinity
Analytical apparatus
Animal tissue culture
Biochemical molecules
Cations
Containers
Escherichia coli
Filtration
Functional groups
Immobilization, molecular or cellular
Mixtures
Particle size
Particles
Plasmids
Samples
Separation
Test kits
Volume
(pipet tips for study of biomols.)
IT Agglutinins and Lectins
Antibodies and Immunoglobulins
Enzymes, uses
Ligands
RL: NUU (Other use, unclassified); USES (Uses)
(pipet tips for study of biomols.)
IT DNA
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(pipet tips for study of biomols.)
IT Fluoropolymers, uses
Glass, uses
Glass beads
Plastics, uses
Polymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)

(pipet tips for study of biomols.)
 IT Pipets
 (tips; pipet tips for study of biomols.)
 IT 12619-70-4, Cyclodextrin
 RL: NUU (Other use, unclassified); USES (Uses)
 (pipet tips for study of biomols.)
 IT 7631-86-9, Silica, uses 9002-84-0, TEFLON
 RL: TEM (Technical or engineered material use); USES (Uses)
 (pipet tips for study of biomols.)

L36 ANSWER 47 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2002:845515 HCAPLUS
 DOCUMENT NUMBER: 137:348737
 TITLE: Arrays of proteins and methods of use thereof
 INVENTOR(S): Wagner, Peter; Ault-Riche, Dana; Nock, Steffen; Itin, Christian
 PATENT ASSIGNEE(S): Zyomyx, Incorporated, USA
 SOURCE: U.S., 31 pp., Cont. of U.S. Ser. No. 115,455.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 7
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6475808	B1	20021105	US 1999-353215	19990714
US 6406921	B1	20020618	US 1998-115455	19980714
US 6475809	B1	20021105	US 2000-570588	20000512
US 6630358	B1	20031007	US 2000-570363	20000512
US 2002106702	A1	20020808	US 2002-112840	20020329
US 2002110933	A1	20020815	US 2002-113964	20020329
PRIORITY APPLN. INFO.:			US 1998-115455	A2 19980714
			US 1999-353215	B3 19990714

AB Protein arrays for the parallel, in vitro screening of biomol. activity are provided. Methods of using the protein arrays are also disclosed. On the arrays, a plurality of different proteins, such as different members of a single protein family, are immobilized on one or more organic thin films on the substrate surface. The protein arrays are particularly useful in drug development, proteomics, and clin. diagnostics. An array device comprises a substrate, an ordered hydrophobic polymer monolayer chemisorbed or physisorbed to the surface, a hydrophilic polymer monolayer, and protein-immobilizing groups covalently attached to a selected fraction of the hydrophilic chains within regions on the array, such that application of selected proteins to the array regions forms an array of protein regions, each having a selected surface concentration of a selected protein carried in and displayed on the hydrophilic monolayer, and separated from one another by border regions effective to resist nonspecific protein binding. Caspase fusion proteins were immobilized on aminoreactive 11,11'-dithiobis(succinimidylundecanoate) attached to gold surfaces of microarrays.

IC ICM G01N033-543
 NCL 436518000
 CC 9-1 (Biochemical Methods)
 Section cross-reference(s): 1, 6, 7
 ST protein array hydrophobic hydrophilic polymer monolayer;
 screening biomol protein array; caspase microarray
 IT Hydrocarbons, analysis

RL: ARU (Analytical role, unclassified); DEV (Device component use); TEM (Technical or engineered material use); ANST (Analytical study); USES (Uses)
(C8-22, polymer, as monolayer on **substrate**; arrays of proteins for **biomol.** screening)

IT Biochemical molecules
Diagnosis
Drug design
High throughput screening
Immobilization, molecular or cellular
Protein microarray technology
(arrays of proteins for **biomol.** screening)

IT Proteome
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(arrays of proteins for **biomol.** screening)

IT Polyoxyalkylenes, analysis
RL: ARU (Analytical role, unclassified); DEV (Device component use); TEM (Technical or engineered material use); ANST (Analytical study); USES (Uses)
(as monolayer on **hydrophobic** layer; arrays of proteins for **biomol.** screening)

IT High throughput screening
(drug; arrays of proteins for **biomol.** screening)

IT Drug screening
(high throughput; arrays of proteins for **biomol.** screening)

IT Polymers, analysis
RL: ARU (Analytical role, unclassified); DEV (Device component use); TEM (Technical or engineered material use); ANST (Analytical study); USES (Uses)
(**hydrophilic**, as monolayer on **hydrophobic** layer;
arrays of proteins for **biomol.** screening)

IT Polymers, analysis
RL: ARU (Analytical role, unclassified); DEV (Device component use); TEM (Technical or engineered material use); ANST (Analytical study); USES (Uses)
(**hydrophobic**, as monolayer on **substrate**; arrays of proteins for **biomol.** screening)

IT Proteins
RL: ARG (Analytical reagent use); DEV (Device component use); TEM (Technical or engineered material use); ANST (Analytical study); USES (Uses)
(**immobilized**; arrays of proteins for **biomol.** screening)

IT 7440-21-3, Silicon, uses 7440-32-6, Titanium, uses 7440-57-5, Gold,
uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(arrays of proteins for **biomol.** screening)

IT 25322-68-3, Polyethyleneglycol
RL: ARU (Analytical role, unclassified); DEV (Device component use); TEM (Technical or engineered material use); ANST (Analytical study); USES (Uses)
(as monolayer on **hydrophobic** layer; arrays of proteins for **biomol.** screening)

IT 186322-81-6DP, Caspase, fusion proteins
RL: BPN (Biosynthetic preparation); RCT (Reactant); BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent)
(**immobilization** on 2D-protein array; arrays of proteins for **biomol.** screening)

IT 2834-05-1, 11-Bromoundecanoic acid 6066-82-6, N-Hydroxysuccinimide
7772-98-7, Sodium thiosulfate
RL: RCT (Reactant); RACT (Reactant or reagent)
(in preparation of aminoreactive monolayer mol.; arrays of proteins for
biomol. screening)

IT 23483-56-9P, 11,11'-Dithiobis(undecanoic acid)
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
(Reactant or reagent)
(in preparation of aminoreactive monolayer mol.; arrays of proteins for
biomol. screening)

IT 147072-47-7P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
(Reactant or reagent)
(preparation as aminoreactive mol. on gold; arrays of proteins for
biomol. screening)

REFERENCE COUNT: 152 THERE ARE 152 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L36 ANSWER 18 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:658885 HCAPLUS
DOCUMENT NUMBER: 137:370710
TITLE: Variable adhesion of micropatterned thermoresponsive
polymer brushes: AFM investigations
of poly(N-isopropylacrylamide) brushes prepared by
surface-initiated polymerizations
AUTHOR(S): Jones, Darren M.; Smith, James R.; Huck, Wilhelm T.
S.; Alexander, Cameron
CORPORATE SOURCE: Melville Laboratory for Polymer Synthesis, Department
of Chemistry, University of Cambridge, Cambridge, CB2
3RA, UK
SOURCE: Advanced Materials (Weinheim, Germany) (2002), 14(16),
1130-1134
CODEN: ADVMEW; ISSN: 0935-9648
PUBLISHER: Wiley-VCH Verlag GmbH
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Atomic force microscopy was used to investigate behavior of surface-grafted
poly(N-isopropylacrylamide) (PNIPAm) during phase transition and use of
adhesion force measurements to probe resulting switchable patterns.
Polymer phase transitions are accompanied by changes in adhesion behavior
corresponding to hydrophilic-to-hydrophobic switch.
The differences in physicochem. properties can be affected in a reversible
manner in surface micropatterned domains. PNIPAm micropatterned domains
were prepared by in situ atom-transfer radical polymerization of NIPAm from
mixed

SANs on gold substrates.

CC 37-5 (Plastics Manufacture and Processing)
Section cross-reference(s): 38

ST micropatterned thermoresponsive polyisopropylacrylamide brush
surface initiated polymn; adhesion phase transition
hydrophilic hydrophobic switch polyisopropylacrylamide
brush

IT Adhesion, physical
Hydrophobicity
Phase transition
Polymer chains
Polymerization catalysts
Surface

(AFM investigations of variable adhesion of micropatterned thermoresponsive poly(N-isopropylacrylamide) brushes prepared by surface-initiated polymers.)

IT **Hydrophilicity**

(effect of polymer phase transitions on hydrophilic-to-hydrophobic switch of poly(N-isopropylacrylamide) brushes prepared by surface-initiated polymers.)

IT 7440-57-5, Gold, uses

RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)

(substrate; AFM investigations of variable adhesion of micropatterned thermoresponsive poly(N-isopropylacrylamide) brushes prepared by surface-initiated polymers.)

REFERENCE COUNT: 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 19 OF 54 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2002:628917 HCPLUS

DOCUMENT NUMBER: 138:133288

TITLE: Development of organic dye-doped silica nanoparticles for bioanalysis and biosensors

AUTHOR(S): Tapec, Rovelyn; Zhao, Xiaojun Julia; Tan, Weihong
CORPORATE SOURCE: Center for Research at the Bio/Nano Interface,
Department of Chemistry and the McKnight Brain Institute, University of Florida, Gainesville, FL, 32611, USA

SOURCE: Journal of Nanoscience and Nanotechnology (2002), 2(3/4), 405-409

CODEN: JNNOAR

PUBLISHER: American Scientific Publishers

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The combination of two **silica** precursors, tetraethylorthosilicate and phenyltriethoxysilane, were utilized to synthesize organic dye-doped **silica** nanoparticles. The **hydrophobic** nature of phenyltriethoxysilane keeps the organic dye in the **silica** matrix, whereas the **hydrophilic** tetraethylorthosilicate-formed **silica** allows the resulting nanoparticles to be dispersed in aqueous solns. Characterization of the nanoparticles showed that they could be synthesized in the nanometer range with high photostability and minimal dye leakage. The **silica** matrix of the nanoparticles allows different routes of surface **biomol.** modification for biosensor and bioanal. applications. We have shown different applications of the nanoparticles in bioanal. and in biosensing. Biotin interaction of avidin-coated nanoparticles can be used for the determination of biotinylated bovine serum albumin, and the **immobilization** of glutamate dehydrogenase on the nanoparticle surfaces enables the nanoparticles to be used as biosensors for glutamate determination

CC 9-1 (Biochemical Methods)

ST org dye doped **silica** nanoparticle bioanalysis biosensor

IT Biosensors

Biotinylation

Immobilization, animal

Nanoparticles

(organic dye-doped **silica** nanoparticles for bioanal. and biosensors)

IT Avidins

RL: ARU (Analytical role, unclassified); PEP (Physical, engineering or

chemical process); PYP (Physical process); ANST (Analytical study); PROC (Process)
 (organic dye-doped silica nanoparticles for bioanal. and biosensors)

IT Albumins, analysis
 RL: ANT (Analyte); ANST (Analytical study)
 (serum; organic dye-doped silica nanoparticles for bioanal. and biosensors)

IT 989-38-8, Rhodamine 6G
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
 (organic dye-doped silica nanoparticles for bioanal. and biosensors)

IT 9029-12-3, NAD(P)-glutamate dehydrogenase
 RL: ARG (Analytical reagent use); PEP (Physical, engineering or chemical process); PYP (Physical process); ANST (Analytical study); PROC (Process); USES (Uses)
 (organic dye-doped silica nanoparticles for bioanal. and biosensors)

IT 78-10-4, TEOS 780-69-8 7631-86-9, Silica, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (organic dye-doped silica nanoparticles for bioanal. and biosensors)

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 20 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2002:624931 HCAPLUS
 DOCUMENT NUMBER: 137:338224
 TITLE: Synthesis and nanomorphology of multiblock polymer brushes
 AUTHOR(S): Baum, Marina; Boyes, Stephen; Granville, Anthony;
 Mirosh, Brian; Sedjo, Randy; Brittain, William J.
 CORPORATE SOURCE: Dep. polymer Sci., Univ. Akron, Akron, OH, 44325-3909,
 USA
 SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2002), 43(2), 72-73
 CODEN: ACPPAY; ISSN: 0032-3934
 PUBLISHER: American Chemical Society, Division of Polymer Chemistry
 DOCUMENT TYPE: Journal; (computer optical disk)
 LANGUAGE: English
 AB In this presentation, some of the latest results on polymer brushes will be discussed including (1) new methods of using living radical polymerization to synthesize brushes, (2) the effect of the anchoring group structure on the behavior of self-assembled initiators, (3) the synthesis of semifluorinated polymer brushes, and (4) the synthesis and nanomorphol. of multiblock copolymer brushes. We used reverse addition fragmentation transfer (RAFT) polymerization to prepare poly(N,N-dimethylacrylamide) homopolymer brushes and diblock copolymer brushes. The procedure uses a chain transfer agent (cumyl thiobenzoate) to control the polymerization from a surface-immobilized azo initiator. Without chain transfer agent (CTA), polymer brush formation was uncontrolled; with CTA, we successfully performed incremental monomer addns. and prepared diblock copolymer brushes. Using atom transfer radical polymerization, we prepared two triblock copolymer brushes: Si/SiO₂//PS-b-PMA-b-PS and Si/SiO₂//PMA-b-PS-b-PMA (PS = polystyrene and PMA = poly(Me acrylate)). These multiblock copolymer brushes were characterized via FTIR-ATR, ellipsometry, water contact angles, XPS and

atomic force microscopy. The **brushes** exhibited reversible changes in **surface** composition that was induced by exposure to block-selective solvents.

CC 35-4 (Chemistry of Synthetic High Polymers)
 Section cross-reference(s): 36

ST prep methyl acrylate **styrene** block graft copolymer contact angle

IT Chain transfer
 (addition fragmentation transfer polymerization; synthesis and contact angle of Me acrylate-**styrene** multiblock polymer **brushes**)

IT Polymerization
 (atom transfer, radical; synthesis and contact angle of Me acrylate-**styrene** multiblock polymer **brushes**)

IT Chain transfer agents
 (synthesis and contact angle of Me acrylate-**styrene** multiblock polymer **brushes**)

IT Contact angle
 (water; synthesis and contact angle of Me acrylate-**styrene** multiblock polymer **brushes**)

IT 201611-77-0
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (RAFT chain transfer agent; synthesis and contact angle of Me acrylate-**styrene** multiblock polymer **brushes**)

IT 7631-86-9D, Silica, reaction products with bromo-isobutyrate
 RL: CAT (Catalyst use); USES (Uses)
 (catalyst substrate; synthesis and contact angle of Me acrylate-**styrene** multiblock polymer **brushes**)

IT 474122-62-8P, Methyl acrylate-**styrene** block graft copolymer
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (di- and triblock; synthesis and contact angle of Me acrylate-**styrene** multiblock polymer **brushes**)

IT 255727-67-4D, reaction products with silica
 RL: CAT (Catalyst use); USES (Uses)
 (fixed ATRP initiator; synthesis and contact angle of Me acrylate-**styrene** multiblock polymer **brushes**)

IT 600-00-0, Ethyl 2-bromoisobutyrate
 RL: CAT (Catalyst use); USES (Uses)
 (free initiator; synthesis and contact angle of Me acrylate-**styrene** multiblock polymer **brushes**)

IT 3030-47-5, PMDETA 7787-70-4, Copper bromide (CuBr)
 RL: CAT (Catalyst use); USES (Uses)
 (synthesis and contact angle of Me acrylate-**styrene** multiblock polymer **brushes**)

IT 9003-21-8P, Poly(methyl acrylate) 9003-53-6P, Polystyrene
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (synthesis and contact angle of Me acrylate-**styrene** multiblock polymer **brushes**)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 21 OF 54 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2002:615396 HCPLUS

TITLE: Photoactivatable silanes: Synthesis and uses in biopolymer array fabrication on **glass substrates**

AUTHOR(S): Li, Handong; McGall, Glenn

CORPORATE SOURCE: Chemistry, Affymetrix, Inc, Santa Clara, CA, 95051,

SOURCE: USA
 Abstracts of Papers, 224th ACS National Meeting,
 Boston, MA, United States, August 18-22, 2002 (2002),
 COLL-357. American Chemical Society: Washington, D.
 C.

DOCUMENT TYPE: Conference; Meeting Abstract
 LANGUAGE: English

AB We wish to report a fast and easy way to build **hydrophobic** layers and **hydrophilic** functional polymer layers thereafter onto glass surfaces. A benzophenone-based silane was synthesized and used to prepare stable, **hydrophobic**, photo-activatable coatings on glass supports. **Hydrophilic** polymers were then applied to the **substrate**, and photochem. cross-linked to the underlying silane. The resulting substrates were suitable for fabricating oligonucleotide probe arrays either by in situ synthesis or immobilization methods. The polymer coated surfaces prepared by this method have the following advantages: (1) An initial **hydrophobic** silane coating offers protection from unwanted hydrolysis, and thus increased coating stability. (2) Polymer grafting provides multivalent attachment to the **substrate**, which further increases the coating stability. (3) A plurality of functional groups on the polymer provides increased capacity for subsequent attachment of nucleic acid probes or other **biomols.**, compared to conventional silanated substrates. Structure of the polymeric surfaces:.

L36 ANSWER 22 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2002:587878 HCAPLUS
 DOCUMENT NUMBER: 137:259324
 TITLE: Enolase Adsorption onto **Hydrophobic** and **Hydrophilic** Solid Substrates
 AUTHOR(S): Almeida, A. T.; Salvadori, M. C.; Petri, D. F. S.
 CORPORATE SOURCE: Instituto de Quimica, Universidade de Sao Paulo, Sao Paulo, 05513-970, Brazil
 SOURCE: Langmuir (2002), 18(18), 6914-6920
 CODEN: LANGD5; ISSN: 0743-7463
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB The understanding of the adsorption process of **biomols.** is very important for biol. and engineering applications. Enolase is an enzyme of glycolytic pathway that catalyzes a reversible conversion of 2-phosphoglycerate to phosphoenolpyruvate. In this work the adsorption behavior of enolase (2-phospho-D-glycerate hydrolase) onto **hydrophilic** silicon wafers and amino-terminated surfaces (APS) and onto **hydrophobic** polymer polystyrene (PS) was studied by means of null-ellipsometry. The adsorption kinetics of enolase onto these substrates presented three distinct regions: (i) a diffusion-controlled one; (ii) an adsorption plateau; (iii) continuous, irreversible, and asymptotic increase of the adsorbed amount with time. Atomic force microscopy (AFM) showed that well-packed entities formed an enolase biofilm, which might correspond to the monolayer formation. With increase of the adsorption time, aggregates appeared on the surface, suggesting multilayer formation. The early stages might be predicted by the random sequential adsorption model (RSA), while the cooperative sequential adsorption (CSA) model seems to describe regions ii and iii. No significant influence of ionic strength was observed on the adsorption behavior of enolase onto the present substrates. The adsorption isotherms show that enolase has no preferential adhesion onto

hydrophilic or hydrophobic substrates.

Contact angle measurements showed that PS surfaces became **hydrophilic** and silicon surfaces turned **hydrophobic** after the formation of the enolase biofilm. The study of the influence of pH on the enolase adsorption on silicon and APS surfaces showed that the higher adsorbed amount occurs when pH is close to enolase pI. Far from pI the enzyme solubility decreases and some repulsive forces come out, leading to a decrease in the adsorbed amount

CC 7-7 (Enzymes)

ST enolase adsorption **hydrophobic hydrophilic solid surface**

IT Adsorption

Conformational transition

(enolase adsorption onto **hydrophobic and hydrophilic solid substrates**)IT **Immobilization, molecular or cellular**(enzyme; enolase adsorption onto **hydrophobic and hydrophilic solid substrates**)

IT Adsorption

(protein; enolase adsorption onto **hydrophobic and hydrophilic solid substrates**)

IT 7440-21-3, Silicon, processes 7440-21-3D, Silicon, (aminopropyl)trimethoxysilane-functionalized 9003-53-6, Polystyrene 9014-08-8, Enolase 13822-56-5D, (Aminopropyl)trimethoxysilane, silicon functionalized with

RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)

(enolase adsorption onto **hydrophobic and hydrophilic solid substrates**)

REFERENCE COUNT: 41 THERE ARE 41 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 23 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2002:502718 HCAPLUS

DOCUMENT NUMBER: 137:59835

TITLE: Disposable plate electrode with biological active film

INVENTOR(S): Shen, Thomas Y.

PATENT ASSIGNEE(S): Taiwan

SOURCE: U.S., 11 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
US 6413394	B1	20020702	US 1999-348824	19990708
US 2001024804	A1	20010927	US 2001-852048	20010510
US 6746708	B2	20040608		

PRIORITY APPLN. INFO.: US 1999-348824 A3 19990708

AB A disposable plate electrode with biol. active film is used to cooperate with a biol. sensor for analyzing composition and measuring concentration of a test

sample according to elec. effect resulted from a biochem. reaction. The plate electrode comprises at least an electrode portion for transmission of the elec. effect as well as a biol. active film that reacts with the test sample chemical or biochem. The biol. active film contains a carrier layer (cellulose, for example) for adsorbing and keeping the biol. active

substance (enzyme, for example), which, the carrier layer, can change the electrode portion from hydrophobic into hydrophilic and protect the biol. active substance against impairment during relatively higher temperature drying process. The method for forming a biol. active film on the disposable electrode is mainly based on screen printing technique to form a conductive film, an elec. insulating layer, a carrier layer, etc., for speedy production and low cost purpose.

IC ICM G01N027-26

NCL 204403000

CC 9-1 (Biochemical Methods)

IT Adsorption

Animal cell

Animal tissue

Anodes

Biochemical molecules

Biosensors

Buffers

Carriers

Cathodes

Cell

Ceramics

Composition

Concentration (condition)

Drying

Electric insulators

Grain size

Hydrophilicity

Hydrophobicity

Immobilization, molecular or cellular

Interface

Microorganism

Mixtures

Plant cell

Plant tissue

Plates

Reaction

Reference electrodes

Samples

Screen printing

Sensors

Solutions

Temperature

pH

(disposable plate electrode with biol. active film)

IT Albumins, uses

Amino acids, uses

Gelatins, uses

Glass, uses

Polyoxyalkylenes, uses

RL: DEV (Device component use); USES (Uses)

(disposable plate electrode with biol. active film)

REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 24 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2002:229591 HCAPLUS

DOCUMENT NUMBER: 136:397849

TITLE: Adsorption Behavior of Creatine Phosphokinase onto Solid Substrates

AUTHOR(S): Pancera, S. M.; Alvarez, E. B.; Politi, M. J.;
Gliemann, H.; Schimmel, Th.; Petri, D. F. S.
CORPORATE SOURCE: Instituto de Quimica, Universidade de Sao Paulo, Sao
Paulo, SP, 05513-970, Brazil
SOURCE: Langmuir (2002), 18(9), 3517-3523
CODEN: LANGD5; ISSN: 0743-7463
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The understanding of biomol. interactions on solid surfaces is of importance for the design of new biomaterials and medical devices. In this work, the adsorption behavior of creatine phosphokinase (CPK) onto hydrophilic (silicon wafers and amino-terminated surfaces), hydrophobic (polystyrene), and charged (sulfonated polystyrene films) substrates was investigated by means of in situ ellipsometry, contact angle measurements, and atomic force microscopy. CPK is an interesting biomol. due to its large application in the diagnosis for myocardial infarction and muscle disorders. In the dilute regime (c .apprx. 0.005 g/L) the ellipsometric measurements revealed that the kinetics adsorption process of CPK onto silicon wafers and amino-terminated surfaces can be divided into four stages: (i) a diffusive one, (ii) adsorption and rearrangement, (iii) formation of a monolayer, and (iv) continuous and irreversible adsorption caused by relaxation process and cooperative binding. This seems to be the first time that such a behavior has been exptl. observed. For more concentrated solns., the CPK formed aggregates in solution and, therefore, the adsorption increased continuously with time. CPK adsorbed irreversibly either on hydrophilic or on hydrophobic substrates. The adsorption isotherms showed a preferential adhesion of CPK onto the hydrophilic substrates. Since hydrophilic segments predominate the CPK structure, hydrogen bonding seems to play a major role in the adsorption process.

CC 7-7 (Enzymes)
ST creatine phosphokinase immobilization adsorption polystyrene
silicon wafer
IT Immobilization, molecular or cellular
(enzyme; hydrogen bonding may play role in adsorption behavior of
creatine phosphokinase onto solid substrates)
IT Cooperative phenomena
Hydrogen bond
Muscle, disease
(hydrogen bonding may play role in adsorption behavior of creatine
phosphokinase onto solid substrates)
IT Heart, disease
(infarction; hydrogen bonding may play role in adsorption behavior of
creatine phosphokinase onto solid substrates)
IT 9003-53-6D, Polystyrene, sulfonated
RL: NUU (Other use, unclassified); USES (Uses)
(films; hydrogen bonding may play role in adsorption behavior of
creatine phosphokinase onto solid substrates)
IT 7647-14-5, Sodium chloride, biological studies 9001-15-4D, Creatine
phosphokinase, immobilization
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(hydrogen bonding may play role in adsorption behavior of creatine
phosphokinase onto solid substrates)
IT 9003-53-6, Polystyrene 13822-56-5, Aminopropyltrimethoxysilane
RL: NUU (Other use, unclassified); USES (Uses)
(hydrogen bonding may play role in adsorption behavior of creatine
phosphokinase onto solid substrates)

IT 7440-21-3, Silicon, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (wafers; hydrogen bonding may play role in adsorption behavior of
 creatine phosphokinase onto solid substrates)

REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 25 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2002:51331 HCAPLUS
 DOCUMENT NUMBER: 136:98852
 TITLE: Methods of study for protein patterning and cell adhesion properties
 INVENTOR(S): Chen, Christopher S.; Tien, Joe Y.; Tan, John; Bhatia, Sangeeta N.; Jastromb, William E.
 PATENT ASSIGNEE(S): The Johns Hopkins University School of Medicine, USA
 SOURCE: PCT Int. Appl., 71 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002004113	A2	20020117	WO 2001-US41344	20010711
WO 2002004113	A3	20030123		
			W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG	
US 2002182633	A1	20021205	US 2001-904200	20010711
			US 2000-217464P	P 20000711

PRIORITY APPLN. INFO.:
 AB The invention concerns a method of adhering a biomol. to a substrate, comprising treating the substrate with a surfactant compound and a biomol. More particularly, the invention relates to a method of adhering a biomol. to a substrate wherein the surfactant compound is not covalently linked to the substrate. The invention also relates to a device for adhering a biomol. in a predetd. position comprising: a substrate having thereon a plurality of cytophilic regions that can adhere a biomol. on the substrate by cytophobic regions to which the biomols. do not adhere contiguous with the cytophilic regions, wherein the cytophobic regions comprise one or more surfactant compds. Diagrams describing the methodol. are given.

IC ICM B01J019-00

CC 9-16 (Biochemical Methods)

Section cross-reference(s): 35

IT Adhesion, biological

Analytical apparatus

Animal cell

Biochemical molecules

DNA microarray technology

Electrophoresis

Eubacteria

Extracellular matrix
Fibroblast
Fluorometry
Fungi
Hematopoietic precursor cell
Human
Hybridoma
 Hydrophilicity
 Hydrophobicity
 Immobilization, molecular or cellular
Liposomes
Lithography
Mammalia
Microorganism
Molecular association
Molecular weight
Photolithography
Printing (impact)
Sulfhydryl group
Surfactants
Virus
Xenopus laevis
Yeast
 (methods of study for protein patterning and cell adhesion properties)

IT **Glass, uses**
RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (methods of study for protein patterning and cell adhesion properties)

L36 ANSWER 26 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2002:5745 HCAPLUS

DOCUMENT NUMBER: 136:217131

TITLE: Synthesis of Polymer Brushes on
Silicate Substrates via Reversible
Addition Fragmentation Chain Transfer Technique

AUTHOR(S): Baum, Marina; Brittain, William J.

CORPORATE SOURCE: Department of Polymer Science, The University of
Akron, Akron, OH, 44325-3909, USA

SOURCE: Macromolecules (2002), 35(3), 610-615
CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Reversible addition fragmentation chain transfer (RAFT) has been used to
synthesize polymer brushes. Styrene, Me methacrylate,
and N,N-dimethylacrylamide brushes were prepared under
RAFT conditions using silicate surfaces that were
modified with surface-immobilized azo initiators. Films with
controlled thicknesses were produced. RAFT was also used to synthesize
PS-b-PDMA and PDMA-b-PMMA block copolymer brushes that displayed
reversible surface properties upon treatment with
block-selective solvents.

CC 35-4 (Chemistry of Synthetic High Polymers)

ST polystyrene polymethyl methacrylate
polydimethylacrylamide brush synthesis silicon
wafer; block polymer brush synthesis reversible addn
fragmentation chain transfer

IT Silanes
RL: CAT (Catalyst use); USES (Uses)
 (chloro, reaction products with azo initiators, surface)

monolayer; synthesis of polymer **brushes** on silicate substrates via reversible addition fragmentation chain transfer technique)

IT Polymerization
(graft, radical, surface; synthesis of polymer **brushes** on silicate substrates via reversible addition fragmentation chain transfer technique)

IT Chain transfer agents
(synthesis of polymer **brushes** on silicate substrates via reversible addition fragmentation chain transfer technique)

IT 7440-21-3, Silicon, uses
RL: NUU (Other use, unclassified); USES (Uses)
(ATR crystal, substrate; synthesis of polymer **brushes** on silicate substrates via reversible addition fragmentation chain transfer technique)

IT 201611-77-0
RL: RCT (Reactant); RACT (Reactant or reagent)
(chain transfer agent; synthesis of polymer **brushes** on silicate substrates via reversible addition fragmentation chain transfer technique)

IT 7631-86-9, Aerosil 300, uses
RL: NUU (Other use, unclassified); USES (Uses)
(colloidal, substrate; synthesis of polymer **brushes** on silicate substrates via reversible addition fragmentation chain transfer technique)

IT 401929-59-7P 401929-60-0P
RL: SPN (Synthetic preparation); PREP (Preparation)
(diblock, surface-grafted; synthesis of polymer **brushes** on silicate substrates via reversible addition fragmentation chain transfer technique)

IT 200263-56-5D, reaction products with mono- or trichlorosilanes
RL: CAT (Catalyst use); USES (Uses)
(polymerization initiator, surface monolayer; synthesis of polymer **brushes** on silicate substrates via reversible addition fragmentation chain transfer technique)

IT 110866-50-7P, Silica-styrene graft copolymer
110866-51-8P, Methyl methacrylate-silica graft copolymer
209401-49-0P, N,N-Dimethylacrylamide-silica graft copolymer
RL: SPN (Synthetic preparation); PREP (Preparation)
(surface-grafted; synthesis of polymer **brushes** on silicate substrates via reversible addition fragmentation chain transfer technique)

IT 67-56-1, Methanol, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(transesterification agent for chain "degrafting"; synthesis of polymer **brushes** on silicate substrates via reversible addition fragmentation chain transfer technique)

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 27 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2002:2868 HCAPLUS
 DOCUMENT NUMBER: 136:167997
 TITLE: Synthesis of Adaptive Polymer
Brushes via "Grafting To" Approach from Melt
 AUTHOR(S): Minko, Sergiy; Patil, Satish; Datsyuk, Vitaliy; Simon, Frank; Eichhorn, Klaus-Jochen; Motornov, Michail;

CORPORATE SOURCE: Usov, Denys; Tokarev, Igor; Stamm, Manfred
Department of Polymer Interfaces, Institut fuer
Polymerforschung Dresden e.V., Dresden, 01069, Germany

SOURCE: Langmuir (2002), 18(1), 289-296
CODEN: LANGD5; ISSN: 0743-7463

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB We report a simple method to synthesize binary **polymer brushes** from two incompatible **polymers** of different polarity. The synthetic route is based on a subsequent step-by-step grafting of carboxyl-terminated polystyrene and poly(2-vinylpyridine) to the surface of a Si wafer functionalized with 3-glycidoxypropyl-trimethoxysilane. The end-functional polymers were spin-coated on the substrate, and grafting was carried out at a temperature higher than the glass transition temperature of the polymers. The composition of the binary brushes can be regulated based on grafting kinetics of the first polymer by the change of time or/and temperature of grafting. This method reveals a smooth and homogeneous polymer film on the macroscopic scale, while at the nanoscopic scale the system undergoes phase segregation effecting switching/adaptive properties of the film. Upon exposure to different solvents, the film morphol. reversibly switches from "ripple" to "dimple" structures as well as the surface energetic state switches from hydrophobic to hydrophilic. The same switching of hydrophilic/hydrophobic properties was obtained for the different ratios between two grafted **polymers** in the binary brush.

CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 36

ST hydrophilic hydrophilic surface morphol switching
polystyrene polyvinylpyridine brush silicon

IT Polymer morphology
(surface; synthesis of adaptive **polymer brushes** via
"grafting to" approach from melt)

IT Contact angle

Hydrophilicity
(synthesis of adaptive **polymer brushes** via
"grafting to" approach from melt and their switching
hydrophilic/hydrophobic behavior)

IT 2530-83-8DP, 3-Glycidoxypropyltrimethoxysilane, esters with
carboxy-terminated polystyrene and polyvinylpyridine
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(Si surface-grafted; synthesis of adaptive **polymer brushes** via grafting to approach from melt)

IT 108-31-6DP, Maleic anhydride, reaction products with polypropylene
9003-07-0DP, Polypropylene, maleic anhydride-terminated
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(binary brushes with polyvinylpyridine; synthesis of adaptive
polymer brushes via grafting to approach from melt)

IT 113023-73-7, 4-(1-Bromoethyl)benzoic acid
RL: RCT (Reactant); RACT (Reactant or reagent)
(initiator for polystyrene synthesis; synthesis of adaptive
polymer brushes via grafting to approach from melt)

IT 9003-53-6DP, Polystyrene, carboxy-terminated, esters with
glycidoxypropyltrimethoxysilane-grafted Si 25014-15-7DP,
Poly(2-vinylpyridine), carboxy-terminated, esters with
glycidoxypropyltrimethoxysilane-grafted Si
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(synthesis of adaptive **polymer brushes** via grafting)

to approach from melt)

IT 7440-21-3DP, Silicon, glycidyloxypropyl-grafted, esters with carboxy-terminated polystyrene and poly(2-vinylpyridine)
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (synthesis of adaptive polymer brushes via grafting to approach from melt and their switching hydrophilic/hydrophobic behavior)

IT 64-17-5, Ethanol, uses 108-88-3, Toluene, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (synthesis of adaptive polymer brushes via grafting to approach from melt and their switching hydrophilic/hydrophobic behavior in)

REFERENCE COUNT: 44 THERE ARE 44 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 28 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2001:851758 HCAPLUS
 DOCUMENT NUMBER: 135:368907
 TITLE: Method and apparatus for the identification and characterization of molecular interaction events with molecular arrays
 INVENTOR(S): Henderson, Eric; Mosher, Curtis; Lynch, Michael P.
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S. Pat. Appl. Publ., 21 pp., Division of U.S. Ser. No. 574,519.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 4
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2001044106	A1	20011122	US 2000-745362	20001221
US 2001051337	A1	20011213	US 2000-574519	20000518
US 6573369	B2	20030603		
US 2003013111	A1	20030116	US 2002-179102	20020625
US 2003073250	A1	20030417	US 2002-225080	20020821
US 2003186311	A1	20031002	US 2003-427003	20030430
PRIORITY APPLN. INFO.:			US 1999-135290P	P 19990521
			US 2000-574519	A3 20000518
			US 2000-238556P	P 20001010
			US 2000-745362	A1 20001221
			US 2001-974757	A2 20011009
			US 2002-225080	A2 20020821

AB The invention concerns an apparatus and method for the formation and anal. of novel miniature deposition domains. These deposition domains are placed on a surface to form a mol. array. The mol. array is scanned with an atomic force microscopy (AFM) to analyze mol. recognition events and the effect of introduced agents on defined mol. interactions. This approach can be carried out in a high throughput format, allowing rapid screening of thousands of mol. species in a solid state array. The procedures described here have the added benefit of allowing the measurement of changes in mol. binding events resulting from changes in the anal. environment or introduction of addnl. effector mols. to the assay system. The processes described herein are extremely useful in the search for compds. such as new drugs for treatment of undesirable physiol. conditions. The method and apparatus of the present invention does not require the labeling of the deposition material or the target sample and may also

be used to deposit large size mols. without harming the same. Diagrams describing the apparatus are given.

IC ICM C12Q001-68
ICS C12P019-34

NCL 435006000

CC 9-1 (Biochemical Methods)

IT Amino group
Analytical apparatus
Atomic force microscopes
Atomic force microscopy
 Biochemical molecules
Capillary tubes
Carboxyl group
Chemicals
Cleaning
Computer application
DNA microarray technology
Drug screening
Elasticity
Friction
 Hydrophilicity
 Hydrophobicity
 Immobilization, biochemical
Light-sensitive materials
Microspheres
Molecular recognition
Photon
Porous materials
Process control
Radiation
Solutions
 (method and apparatus for identification and characterization of mol. interaction events with mol. arrays)

IT Glass, uses
 Glass beads
Mica-group minerals, uses
RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (method and apparatus for identification and characterization of mol. interaction events with mol. arrays)

L36 ANSWER 29 OF 54 HCPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2001:203920 HCPLUS
TITLE: Structure and thermodynamics of monolayers of a melt polymer brush
AUTHOR(S): Goedel, Werner A.; Mallwitz, Frank; Luap, Clarisse;
Peyratout, Claire; Steitz, Roland
CORPORATE SOURCE: Macromolecular & Organic Chemistry, University of Ulm,
Ulm 89081, Germany
SOURCE: Abstracts of Papers, 221st ACS National Meeting, San
Diego, CA, United States, April 1-5, 2001 (2001)
PMSE-220
CODEN: 69FZD4
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal; Meeting Abstract
LANGUAGE: English
AB **Hydrophobic polymers with low glass transition temps.**
and **hydrophilic** head groups form insol. monolayers at the
air/water interface. These films resemble single lamellae of phase separated
block-copolymers. Thus, theories which originally have been developed to

describe the latter systems can be applied to the interface bound monolayers. Compared to phase separated Blockcopolymers, however, these monolayers offer the addnl. advantage that the area per polymer chain can easily be changed via lateral compression. Due to the tethering of the head groups to one of the interfaces, the free ends (and any chain segment in between the head group and the free end) distribute in a characteristic, non-centrosym. profile within the monolayer. Due to the constant d. of the polymer, the thickness R is inverse proportional to the area covered by the monolayer [1-2]. Upon lateral compression the polymer chains become increasingly stretched, giving rise to an entropy driven restoring force. In this contribution the inner structure and thermodn. of monodisperse, bidisperse melt brushes and of partially swollen brushes are investigated and discussed in the framework of current polymer brush theories. Baltes, M. Schwendler, C. A. Helm, R. Heger, W. A. Goedel Macromolecules 1997, 30, p. 6633-6639 [2]R. Heger, W. A. Goedel, Macromolecules 1996, 29, 8912-21 [3]F. Mallwitz Ph.D Thesis.

L36 ANSWER 30 OF 54 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2001:183360 HCPLUS
 DOCUMENT NUMBER: 134:353789
 TITLE: Switching of surface properties with polymer brushes
 AUTHOR(S): Stamm, Manfred; Minko, Sergiy; Goreshnik, Evgeniy;
Usov, Denis; Sidorenko, Alexander
 CORPORATE SOURCE: Institut fur Polymerforschung Dresden e.V., Dresden,
 01069, Germany
 SOURCE: Materials Research Society Symposium Proceedings
 (2001), 629(Interfaces, Adhesion and Processing in
 Polymer Systems), FF9.3.1-FF9.3.8
 CODEN: MRSPDH; ISSN: 0272-9172
 PUBLISHER: Materials Research Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB Switchable surfaces were fabricated by grafting of two different polymers: polystyrene (PS) and poly(2-vinylpyridine) (PVP) onto the surface of Si wafers. The binary brushes of various composition, mol. weight, and grafting d. were synthesized via free radical polymerization with an azo-initiator covalently attached to the surface of Si wafers. The Si wafers were pretreated with 3-glycidoxypropyltrimethoxysilane or p-aminophenyltrimethoxysilane, then exposed to initiator solution. Polymerization was carried out by immersing the functionalized wafers in the first monomer solution, allowing for polymerization,

rinsing all unreacted materials, then exposing to the second monomer solution. The binary brushes are sensitive to the surrounding media. After exposure to a solvent selective for PVP (ethanol, water + HCl) the surface becomes hydrophilic and the top of the layer is covered by PVP. After exposure to a solvent selective for PS (toluene) the surface becomes hydrophobic and the top of the layer is enriched with PS segments. Switching kinetics depends on grafting d. and layer composition and varies from several seconds to several minutes at room temperature. The surface morphol. and the wetting behavior of the layers switches, i.e., layer reconstruction is reversible and the cycle can be repeated many times.

CC 36-6 (Physical Properties of Synthetic High Polymers)
 ST polystyrene polyvinylpyridine brush surface
 silicon wafer substrate; solvent response polystyrene
 polyvinylpyridine brush switching
 IT Polymer chains

(brush; morphol. switching of polystyrene and poly(vinylpyridine) on **silicon substrate** upon exposure to different solvents)

IT Polymers, properties
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (brush; morphol. switching of polystyrene and poly(vinylpyridine) on **silicon substrate** upon exposure to different solvents)

IT Contact angle
 (morphol. switching of polystyrene and poly(vinylpyridine) on **silicon substrate** upon exposure to different solvents)

IT Polymer morphology
 (surface; morphol. switching of polystyrene and poly(vinylpyridine) on **silicon substrate** upon exposure to different solvents)

IT 7647-01-0, Hydrochloric acid, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (aqueous solution solvent; morphol. switching of polystyrene and poly(vinylpyridine) on **silicon substrate** upon exposure to different solvents)

IT 78-67-1, AIBN 2638-94-0, 4,4'-Azobis(4-cyanopentanoic acid)
 RL: CAT (Catalyst use); USES (Uses)
 (azo radical initiator; morphol. switching of polystyrene and poly(vinylpyridine) on **silicon substrate** upon exposure to different solvents)

IT 9003-53-6P, Polystyrene 25014-15-7P, Poly(2-vinylpyridine)
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (morphol. switching of polystyrene and poly(vinylpyridine) on **silicon substrate** upon exposure to different solvents)

IT 2530-83-8, 3-Glycidoxypropyltrimethoxysilane 33976-43-1,
 p-Aminophenyltrimethoxysilane
 RL: NUU (Other use, unclassified); USES (Uses)
 (surface activation reagent; morphol. switching of polystyrene and poly(vinylpyridine) on **silicon substrate** upon exposure to different solvents)

IT 64-17-5, Ethanol, uses 67-66-3, Chloroform, uses 108-88-3, Toluene,
 uses 7732-18-5, Water, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (switching solvent; morphol. switching of polystyrene and poly(vinylpyridine) on **silicon substrate** upon exposure to different solvents)

IT 7440-21-3, Silicon, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (wafer, **substrate**; morphol. switching of polystyrene and poly(vinylpyridine) on **silicon substrate** upon exposure to different solvents)

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 31 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2000:798058 HCAPLUS
 TITLE: Environmentally responsive polymer brush layers for switchable surface properties.
 AUTHOR(S): Minko, Sergiy; Stamm, Manfred; Horeshnik, Evgenij;
 Usov, Denys; Sidorenko, Alexander
 CORPORATE SOURCE: Institut fuer Polymerforschung Dresden, Dresden,

SOURCE: 01069, Germany
 Abstracts of Papers, 220th ACS National Meeting,
 Washington, DC, United States, August 20-24, 2000
 (2000) PMSE-290
 CODEN: 69FZC3

PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal; Meeting Abstract
 LANGUAGE: English

AB Grafted polymer chains at a solid substrate can adopt a brush-like conformation, when the grafting d. is high. Utilizing a mixed grafted layer with different polymer materials offers the addnl. possibility that surface properties are sensitive to the solvent environment and that the properties of the dry film can be switched between different states. As an example the mixed layer of PS and PVP is presented, where the different components show significantly different solution properties. With a selective solvent for PS, the PS component is swollen while PVP is collapsed due to bad solubility. If the layer is dried it shows hydrophobic behavior, since PS is located at the outer surface. With water/HCl as a solvent the situation is reversed. Here PVP is in good solvent conditions, while PS is not, which results in a swelling of PVP and a hydrophilic general behavior of the dried sample. Surface properties thus can be reversibly switched between two states, and every intermediate state may also be achieved with a mixed solvent. Those mixed grafted layers are thus adaptive to their environment due to a purely conformational effect, i.e. the change of brush conformations in different solvents.

L36 ANSWER 32 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2000:745468 HCAPLUS
 DOCUMENT NUMBER: 134:53298
 TITLE: Force Measurements between Bacteria and Poly(ethylene glycol)-Coated Surfaces
 AUTHOR(S): Razatos, Anneta; Ong, Yea-Ling; Boulay, Fabienne; Elbert, Donald L.; Hubbell, Jeffrey A.; Sharma, Mukul M.; Georgiou, George
 CORPORATE SOURCE: Department of Chemical Engineering Department of Petroleum Engineering and Institute for Molecular and Cell Biology, University of Texas, Austin, TX, 78712, USA
 SOURCE: Langmuir (2000), 16(24), 9155-9158
 CODEN: LANGD5; ISSN: 0743-7463

PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB The atomic force microscope (AFM) was used to directly measure the forces of interaction between E. coli D21 bacteria and hydrophilic glass or hydrophobic N-octadecyltrichlorosilane (OTS)-treated glass substrates coated with the block copolymers, poly(ethylene glycol) (PEG)-lysine dendron or Pluronic F127 surfactant, resp. Short-range repulsive interactions between bacterial cells and substrates coated with the block copolymers were detected by the AFM over distances of separation comparable to the extended length of the PEG polymer chains. In contrast, glass and OTS-treated glass devoid of PEG-lysine dendron or Pluronic F127 exerted long-range attractive forces on E. coli D21 bacteria. Thus, polymeric brush layers appear to not only block the long-range attractive forces of interaction between bacteria and substrates but also introduce repulsive steric effects.

CC 9-4 (Biochemical Methods)

ST Section cross-reference(s): 10
 atomic force microscopy Escherichia bacteria polymer coated glass
 IT Glass, uses
 RL: DEV (Device component use); USES (Uses)
 (N-octadecyltrichlorosilane treated, coated with L-Lysine-polyethylene glycol graft copolymer; force measurements between bacteria and poly(ethylene glycol)-coated surfaces)
 IT Glass, uses
 RL: DEV (Device component use); USES (Uses)
 (N-octadecyltrichlorosilane treated, coated with Pluronic F127; force measurements between bacteria and poly(ethylene glycol)-coated surfaces)
 IT Glass, uses
 RL: DEV (Device component use); USES (Uses)
 (hydrophilic; force measurements between bacteria and poly(ethylene glycol)-coated surfaces)

REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 33 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2000:593962 HCAPLUS
 DOCUMENT NUMBER: 133:310207
 TITLE: Synthesis of polymer brushes on silicate substrates by reversible addition fragmentation chain transfer technique
 Baum, Marina; Brittain, William J.
 CORPORATE SOURCE: Department of Polymer Science, University of Akron, Akron, OH, 44325, USA
 SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2000), 41(2), 1315-1316
 CODEN: ACPPAY; ISSN: 0032-3934
 PUBLISHER: American Chemical Society, Division of Polymer Chemistry
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Utilizing reverse addition fragmentation chain transfer (RAFT) technique to grow polymer brushes on a silicate surface yields a polymer film with some active dithio chain ends, which can lead to further growth of the immobilized polymer chain. Extrapolation of nitrile peak in the FTIR spectrum allows calcn. of initiator efficiency.
 CC 35-4 (Chemistry of Synthetic High Polymers)
 ST polymer brush prepn silicate surface;
 IT reversible addn fragmentation chain transfer polymer
 Chain transfer agents
 (phenylpropyl dithiobenzoate; preparation of polymer brushes on silicate substrates by reversible addition fragmentation chain transfer technique)
 IT Polymerization
 (preparation of polymer brushes on silicate substrates by reversible addition fragmentation chain transfer technique)
 IT Silica gel, miscellaneous
 RL: MSC (Miscellaneous)
 (preparation of polymer brushes on silicate substrates by reversible addition fragmentation chain transfer technique)
 IT 201611-77-0
 RL: MOA (Modifier or additive use); USES (Uses)
 (chain-transfer agents; preparation of polymer brushes on

silicate substrates by reversible addition fragmentation chain transfer technique)

IT 7440-21-3, Silicon, miscellaneous
 RL: MSC (Miscellaneous)
 (preparation of polymer brushes on silicate substrates by reversible addition fragmentation chain transfer technique)

IT 9003-53-6P, Polystyrene 9011-14-7P, PMMA 26793-34-0P, N,N-Dimethylacrylamide homopolymer 110453-53-7P, N,N-Dimethylacrylamide-styrene block copolymer
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation of polymer brushes on silicate substrates by reversible addition fragmentation chain transfer technique)

IT 302594-37-2
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of polymer brushes on silicate substrates by reversible addition fragmentation chain transfer technique in presence of)

IT 37811-13-5P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (preparation of polymer brushes on silicate substrates by reversible addition fragmentation chain transfer technique in presence of)

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 34 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2000:519109 HCAPLUS
 DOCUMENT NUMBER: 133:238364
 TITLE: Surface Functionalization with Polymer and Block Copolymer Films Using Organometallic Initiators
 AUTHOR(S): Ingall, Michael D. K.; Joray, Scott J.; Duffy, Daniel J.; Long, David P.; Bianconi, Patricia A.
 CORPORATE SOURCE: Department of Chemistry, The University of Massachusetts at Amherst, Amherst, MA, 01003, USA
 SOURCE: Journal of the American Chemical Society (2000), 122(32), 7845-7846
 CODEN: JACSAT; ISSN: 0002-7863
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB Lanthanide organometallic catalysts were used to surface-graft polymer brushes of common, com. important, noncyclic olefins to a layer of 5-hexenylsilane on a silicon surface. The 5-hexenyltrichlorosilane precursor reacted with the pretreated silicon and the functionalized substrate was exposed to a THF solution of (Cp)2Sm(THF)2 resulting in formation of Sm-bound allyls that are efficient polymerization catalysts. The catalyst substrate was placed in an atmospheric of 1200 psi of ethylene for 12 to 72 h films of polyethylene of about 90 nm formed on the Si surface. The IR bands at 1098, 1060, and 1016 cm⁻¹ demonstrate covalent bonding of the polymer to the silicon surface via Si-O-Si linkages, and siloxane network modes. These films could not be removed by application of a pressure-sensitive adhesive whereas polyethylene formed on nonfunctionalized Si could be completely removed. The catalyst-functionalized Si substrates were also exposed to Me methacrylate and after 1-9 days, poly(Me methacrylate) films of 30-130 nm were formed, which were also firmly attached to the Si surface. The

polyethylene Sm catalyst **substrates** were partially immersed in Me methacrylate (MMA), such that half the **substrate** was suspended in the neat monomer, while the other half remained above the liquid. After 1-9 days, portions of the **substrates** exposed to MMA had surface films of PMMA, 1.0 μm , while the portions unexposed to MMA showed only polyethylene. Thus, the organometallic initiation system produces surfaces functionalized with strongly bound, films of underlying polyethylene and surface PMMA and a wide variety of engineered surfaces can be produced, including **hydrophilic/hydrophobic** block copolymer films.

CC 35-3 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 67

IT Polymerization catalysts

(metallocene; samarocene anchored to allylsilane functionalized silicon as olefin polymerization initiators and preparation of strongly-adhered polyethylene and PMMA films on catalyst **substrates**)

IT Catalyst supports

Surface composition

(samarocene anchored to allylsilane functionalized silicon as olefin polymerization initiators and preparation of strongly-adhered polyethylene and PMMA

and PMMA

films on catalyst **substrates**)

IT 84086-52-2

RL: RCT (Reactant); RACT (Reactant or reagent)

(precursor; samarocene anchored to allylsilane functionalized silicon as olefin polymerization initiators and preparation of strongly-adhered polyethylene and PMMA films on catalyst **substrates**)

IT 9002-88-4P, Polyethylene 9011-14-7P, PMMA

RL: SPN (Synthetic preparation); PREP (Preparation)

(samarocene anchored to allylsilane functionalized silicon as olefin polymerization initiators and preparation of strongly-adhered polyethylene

and PMMA

films on catalyst **substrates**)

IT 18817-29-3

RL: RCT (Reactant); RACT (Reactant or reagent)

(silanization agent; samarocene anchored to allylsilane functionalized silicon as olefin polymerization initiators and preparation of strongly-adhered

polyethylene and PMMA films on catalyst **substrates**)

IT 7440-21-3, Silicon, uses

RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(vinyl-terminated silane, support; samarocene anchored to allylsilane functionalized silicon as olefin polymerization initiators and preparation

of

strongly-adhered polyethylene and PMMA films on catalyst **substrates**)

IT 80695-16-5, Samarocene

RL: CAT (Catalyst use); USES (Uses)

(vinylsilane-anchored; samarocene anchored to allylsilane functionalized silicon as olefin polymerization initiators and preparation

of

strongly-adhered polyethylene and PMMA films on catalyst **substrates**)

REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 35 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1999:696980 HCAPLUS

DOCUMENT NUMBER: 132:23387
 TITLE: Switching of Polymer Brushes
 AUTHOR(S): Sidorenko, Alexander; Minko, Sergiy; Schenk-Meuser,
 Karin; Duschner, Heinz; Stamm, Manfred
 CORPORATE SOURCE: Max-Planck-Institut fuer Polymerforschung, Mainz,
 55128, Germany
 SOURCE: Langmuir (1999), 15(24), 8349-8355
 CODEN: LANGD5; ISSN: 0743-7463
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Brushlike polymer monolayers composed of two different polymers, polystyrene and poly(2-vinylpyridine), are grafted by radical polymerization on the surface of silicon wafers. Thickness, grafting d., mol. weight of grafted chains, and the composition of the layers were regulated by grafting time, monomer concentration, and addnl. initiator in solution. A typical dry film thickness is between 10 and 100 nm, and the mol. wts. of the components range from 100 to 300 kg/mol. The fabricated layers turn out to be sensitive to the composition of the environment. For instance after exposure to toluene, the layer becomes hydrophobic and the top of the layer is covered by polystyrene. After exposure to HCl, the layer becomes hydrophilic with polyvinylpyridine in the upper layer. This reconstruction of the polymer layer was observed with contact angle and XPS measurements. The composition of the top layer in different media is controlled by the composition and mol. weight of the two polymers in the monolayer. The "switching" properties of the layer are shown to be reversible.
 CC 36-7 (Physical Properties of Synthetic High Polymers)
 IT Polymer chains (conformation; solvent effect on inversion of mixed-polymer monolayers grafted on silicon wafers)
 IT Polymerization (graft; solvent effect on inversion of mixed-polymer monolayers grafted on silicon wafers)
 IT 7440-21-3, Silicon, uses
 RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses) (substrate; solvent effect on inversion of mixed-polymer monolayers grafted on silicon wafers)
 REFERENCE COUNT: 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 36 OF 54 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1999:558730 HCPLUS
 DOCUMENT NUMBER: 132:152229
 TITLE: Controlled interfacial interaction using grafted random copolymers
 AUTHOR(S): Russell, T. P.; Huang, E.; Husseman, M.; Malmstrom, E. E.; Hawker, C. J.
 CORPORATE SOURCE: Polymer Science and Engineering Department, University of Massachusetts, Amherst, MA, 01003, USA
 SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (1999), 40(2), 112-113
 CODEN: ACPPAY; ISSN: 0032-3934
 PUBLISHER: American Chemical Society, Division of Polymer Chemistry

DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Random copolymer brushes poly(styrene-Me methacrylate) (S-MMA) and poly(styrene-2-hydroxyethyl methacrylate) (S-HEMA) were prepared by the grafting to and grafting from approaches, resp. using unimol. TEMPO and alkoxyamine initiators. The copolymers with hydroxy and TEMPO end groups were grafted to Si substrates to obtain the brushes. The wettability and block copolymer orientation in thin films of P(S-MMA) brush systems and hydrophilic/hydrophobic control of P(S-HEMA) systems were studied. The strategy of using random copolymer brush layers to finely tune the characteristics of a surface is generic and can be applied to other polymeric systems.
 CC 35-4 (Chemistry of Synthetic High Polymers)
 Section cross-reference(s): 36
 ST styrene methyl methacrylate brush polymer prepn;
 grafting silicon surface polymer brush control
 interfacial interaction
 IT Polymers, processes
 RL: PEP (Physical, engineering or chemical process); PRP (Properties);
 PROC (Process)
 (brush; hydrophobicity control of silicon by
 surface-grafted random copolymer brushes)
 IT Contact angle
 Polymer morphology
 Wettability
 (hydrophobicity control of silicon by surface-grafted random
 copolymer brushes)
 IT Polymer chains
 (orientation; hydrophobicity control of silicon by
 surface-grafted random copolymer brushes)
 IT 25034-86-0, Methyl methacrylate-styrene copolymer 26010-51-5,
 2-Hydroxyethyl methacrylate-styrene copolymer
 RL: PEP (Physical, engineering or chemical process); PRP (Properties);
 PROC (Process)
 (hydrophobicity control of silicon by surface-grafted random
 copolymer brushes)
 IT 2564-83-2, TEMPO
 RL: CAT (Catalyst use); USES (Uses)
 (initiator; hydrophobicity control of silicon by
 surface-grafted random copolymer brushes)
 IT 7440-21-3, Silicon, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (substrates; hydrophobicity control of silicon by
 surface-grafted random copolymer brushes)

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 37 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1999:211299 HCAPLUS
 DOCUMENT NUMBER: 130:352729
 TITLE: Novel methods for the fabrication of well-defined and patterned polymer brushes
 Benoit, Didier; Husemann, Marc; Mecerreyes, David;
 Morrison, Michael; Hinsberg, William; Hawker, Craig
 J.; Hedrick, James L.; Shah, Rahul; Abbott, Nicholas
 L.
 CORPORATE SOURCE: IBM Almaden Research Center, San Jose, CA, 95120-6099,
 USA
 SOURCE: Polymer Preprints (American Chemical Society, Division

of Polymer Chemistry) (1999), 40(1), 498-499
CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Strategies were developed for the preparation of patterned polymer brushes, either isolated structures from microcontact printed Au surfaces, or chemical patterning of continuous brush structures using lithog. techniques. A non-reactive self-assembled monolayer [SAM] of CH₃(CH₂)₁₅SH is microcontact printed onto a gold surface, then HO(CH₂CH₂O)₂(CH₂)₁₁SH was selectively assembled onto the bare regions of the gold surface. The final step is surface initiated ring opening polymerization of ε-caprolactone or polymerization of other monomers from the functionalized areas of the patterned SAM based on the hydroxyl groups as initiators. Another strategy involves the patterning of a continuous polymer brush into areas of hydrophilic and hydrophobic chains; an alkoxyamine initiator can be readily hydrosilylated with trichlorosilane to obtain the trichlorosiliyl derivative. This derivative can be attached to a variety of surfaces, e.g., native silicon oxide layer of silicon wafers by reaction with the surface silanol groups. Polymer brushes can then be grown on the functionalized surface from vinyl monomers. Patterning of polymer brushes involved spin coating a photoresist layer on the polymer brush, exposure of the photoresist to deep-UV irradiation through a mask, forming a photoacid that diffuses to the polymer brush. Removal of the photoresist led to the patterned brush.

CC 35-7 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 36

ST alkylthiol self assembled monolayer hydroxythiol pattern; caprolactone polymn thiol pattern polymer brush

IT Polymers, preparation

RL: SPN (Synthetic preparation); PREP (Preparation)
(brush; novel methods for fabrication of well-defined and patterned polymer brushes)

IT Photolithography

Photoresists

Self-assembled monolayers

(novel methods for fabrication of well-defined and patterned polymer brushes)

IT Polyketones

RL: SPN (Synthetic preparation); PREP (Preparation)
(novel methods for fabrication of well-defined and patterned polymer brushes)

IT Polymerization

(ring-opening; novel methods for fabrication of well-defined and patterned polymer brushes)

IT Coating process

(spin; novel methods for fabrication of well-defined and patterned polymer brushes)

IT 25232-27-3P, Poly(tert-butyl acrylate)

RL: PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
(brush; novel methods for fabrication of well-defined and patterned polymer brushes)

IT 24980-41-4P, Poly(ε-caprolactone) 25248-42-4P,

Poly[oxy(1-oxo-1,6-hexanediyl)]

RL: SPN (Synthetic preparation); PREP (Preparation)

(brush; novel methods for fabrication of well-defined and patterned polymer brushes)

IT 225229-07-2P
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (novel methods for fabrication of well-defined and patterned polymer brushes)

IT 821-41-0, Hex-5-en-1-ol 10025-78-2, Trichlorosilane 212132-38-2
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (novel methods for fabrication of well-defined and patterned polymer brushes)

IT 225229-06-1P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (novel methods for fabrication of well-defined and patterned polymer brushes)

IT 9003-01-4P, Poly(acrylic acid)
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (patterned brush; novel methods for fabrication of well-defined and patterned polymer brushes)

IT 2917-26-2, Hexadecylthiol 149731-67-9
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (patterned surface; novel methods for fabrication of well-defined and patterned polymer brushes)

IT 7440-57-5, Gold, uses 7631-86-9, Silica, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (substrate; novel methods for fabrication of well-defined and patterned polymer brushes)

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 38 OF 54 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1999:196967 HCPLUS
 DOCUMENT NUMBER: 130:252877
 TITLE: Vitrification of monolayers of a polymer brush
 AUTHOR(S): Goedel, Werner A.; Peyratout, Claire; Ouali, Lahoussine; Schaedler, Volker
 CORPORATE SOURCE: Max-Planck-Inst. Kolloid- Grenzflaechenforschung, Berlin, D-12489, Germany
 SOURCE: Advanced Materials (Weinheim, Germany) (1999), 11(3), 213-217
 CODEN: ADVMEW; ISSN: 0935-9648
 PUBLISHER: Wiley-VCH Verlag GmbH
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB The presence of hydrophilic head groups in hydrophobic polymers have a dramatic effect on the ability of the polymer to spread into a smooth monolayer, as did the state of the polymer was melt or glassy. The influence of the glass transition on the surface activity of such polymers was determined on polybutylstyrene-N+ as a monolayer spread on a water surface at temps. above and below its glass transition temperature. The behavior of the monolayer before and after vitrification was investigated.

CC 36-3 (Physical Properties of Synthetic High Polymers)
 Section cross-reference(s): 66

ST polymer brush monolayer glass transition temp surface pressure vitrification

IT Adsorbed monolayers
 (Langmuir-Blodgett; influence of glass transition on surface activity of polybutylstyrene-N⁺ monolayers)

IT Glass transition temperature
 Surface pressure
 Vitrification
 (influence of glass transition on surface activity of polybutylstyrene-N⁺ monolayers)

IT 30815-20-4D, Poly(4-butylstyrene), trimethylammonium bromide-terminated
 RL: PEP (Physical, engineering or chemical process); PRP (Properties);
 PROC (Process)
 (influence of glass transition on surface activity of polybutylstyrene-N⁺ monolayers)

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 39 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1998:282813 HCAPLUS
 DOCUMENT NUMBER: 128:267932
 TITLE: Printing Patterns of Proteins
 AUTHOR(S): Bernard, Andre; Delamarche, Emmanuel; Schmid, Heinz;
 Michel, Bruno; Bosshard, Hans Rudolf; Biebuyck, Hans
 CORPORATE SOURCE: Zurich Research Laboratory, IBM Research Division,
 Rueschlikon, CH-8803, Switz.
 SOURCE: Langmuir (1998), 14(9), 2225-2229
 CODEN: LANGD5; ISSN: 0743-7463
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Microcontact printing of proteins proves to be an excellent means of directly patterning biomols. on solid substrates. Monolayer quantities of protein equilibrated on the surface of a hydrophobic, elastomeric stamp are immobilized there to rinses with buffer. These biomols. can nevertheless transfer with >99% efficiency from the stamp to a substrate after just 1 s of contact. This capability allows the simple creation of functional patterns of proteins at scales that involve the placement of <1000 mols. in well-defined locations on a surface. The method is suited for the transfer of proteins of many different types onto hydrophilic or hydrophobic substrates.
 CC 9-16 (Biochemical Methods)
 IT Biochemical molecules
 Transfers
 (printing patterns of proteins)
 REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 40 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1997:682616 HCAPLUS
 DOCUMENT NUMBER: 127:323150
 TITLE: Forces between Adsorbed Layers of β -Casein
 AUTHOR(S): Nylander, Tommy; Wahlgren, N. Magnus
 CORPORATE SOURCE: Center for Chemistry and Chemical Engineering, Lund University, Lund, S-221 00, Swed.
 SOURCE: Langmuir (1997), 13(23), 6219-6225
 CODEN: LANGD5; ISSN: 0743-7463
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB The forces between β -casein layers adsorbed onto mica surfaces have been measured as a function of surface separation by using the interferometric surface force apparatus. Both hydrophilic pure mica and a mica surface, which has been made hydrophobic by Langmuir-Blodgett deposition of dimethyldioctadecylammonium bromide, were used. A long-range repulsive force, most probably of electrostatic origin, was observed between β -casein layers adsorbed on hydrobized mica. The results suggest that β -casein forms a monolayer on this surface, where the outer part is less densely packed and protrudes far out into the solution. This open brushlike structure can readily be compressed on which an attractive force arises. The portion of the monolayer closest to the hydrophobized surface is much more compact and has low compressibility. On the pure hydrophilic surface a bilayer structure is more likely, with the a compact inner layer and an outer layer which has a similar structure to the monolayer formed on a hydrophobic surface.

CC 66-4 (Surface Chemistry and Colloids)

ST casein adsorbate mica repulsive force hydrophobicity

IT Mica-group minerals, processes

RL: PEP (Physical, engineering or chemical process); PROC (Process)
(substrate; forces between adsorbed layers of β -casein)

IT Hydrophilicity

Hydrophobicity

(surface; forces between adsorbed layers of β -casein)

REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 41 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1997:344801 HCAPLUS

DOCUMENT NUMBER: 127:2751

TITLE: Refunctionalized oxyfluorinated surfaces

INVENTOR(S): Gardella, Joseph A., Jr.; Vargo, Terrence G.

PATENT ASSIGNEE(S): The Research Foundation of State University of New York, USA

SOURCE: U.S., 15 pp., Cont.-in-part of U.S. Ser. No. 151,533, abandoned.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 5627079	A	19970506	US 1994-307919	19940916
US 4946903	A	19900807	US 1989-328852	19890327
US 5266309	A	19931130	US 1990-522532	19900511
PRIORITY APPLN. INFO.:			US 1989-328852	A2 19890327
			US 1990-522532	A2 19900511
			US 1993-151533	B2 19931112

AB Permanently substituted oxyfluorinated surfaces can be formed on nonfluorinated substrates having a fluorinated surface or fluorocarbon coating applied by gas phase surface fluorination or plasma deposition. The oxyfluorinated surfaces can be refunctionalized by bonding organosilanes, isothiocyanate-containing fluorescent compds. and proteins, such as enzymes, antibodies and peptides directly to such surfaces. Surfaces refunctionalized with such protein based groups are useful in the fabrication of biol. sensors, devices for separation of cell

lines, and filtration applications for selective binding of antigens. Masking techniques can be employed in forming a predetd. pattern of covered and exposed surfaces, for example, prior to oxyfluorination. Among the examples given are the preparation of a liquid chromatog. column for the determination of serum albumin, an electrochem. immunosensitive sensor with immobilized Con A for studying binding of yeast mannan, and an immunosensitive field-effect transistor for detecting Wassermann antigen in syphilis diagnosis.

IC ICM G01N033-543
ICS H05H001-00; B05D005-00; B32B027-00

NCL 436525000

CC 9-16 (Biochemical Methods)
Section cross-reference(s): 13, 14

ST oxyfluorinated surface functionalization protein immobilization biosensor; immunosensor syphilis diagnosis oxyfluorinated surface; liq chromatog column oxyfluorinated surface; lectin binding immunosensor oxyfluorinated surface

IT Syphilis
(Wassermann reaction; refunctionalized oxyfluorinated surfaces for biomol. immobilization in sensors)

IT Macromolecular compounds
RL: ARG (Analytical reagent use); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent); USES (Uses)
(biol.; refunctionalized oxyfluorinated surfaces for biomol. immobilization in sensors)

IT Synthetic fibers
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(ceramic, boride; refunctionalized oxyfluorinated surfaces for biomol. immobilization in sensors)

IT Synthetic fibers
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(ceramic, carbide; refunctionalized oxyfluorinated surfaces for biomol. immobilization in sensors)

IT Synthetic fibers
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(ceramic, nitride; refunctionalized oxyfluorinated surfaces for biomol. immobilization in sensors)

IT Ceramics
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(fibers, boride; refunctionalized oxyfluorinated surfaces for biomol. immobilization in sensors)

IT Ceramics
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(fibers, carbide; refunctionalized oxyfluorinated surfaces for biomol. immobilization in sensors)

IT Ceramics
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(fibers, nitride; refunctionalized oxyfluorinated surfaces for biomol. immobilization in sensors)

IT Hydrocarbons, analysis
RL: ARU (Analytical role, unclassified); NUU (Other use, unclassified); ANST (Analytical study); USES (Uses)
(fluoro; refunctionalized oxyfluorinated surfaces for biomol.

immobilization in sensors)

IT Antibodies
Enzymes, preparation
Proteins, specific or class
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(immobilized; refunctionalized oxyfluorinated surfaces for biomol. immobilization in sensors)

IT Field effect transistors
(immunochem. sensitive; refunctionalized oxyfluorinated surfaces for biomol. immobilization in sensors)

IT Biosensors
(immunol., fiber-optic; refunctionalized oxyfluorinated surfaces for biomol. immobilization in sensors)

IT Biosensors
(immunosensors; refunctionalized oxyfluorinated surfaces for biomol. immobilization in sensors)

IT Proteins, specific or class
RL: ARG (Analytical reagent use); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent); USES (Uses)
(metalloproteins; refunctionalized oxyfluorinated surfaces for biomol. immobilization in sensors)

IT Alloys, analysis
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(nonferrous; refunctionalized oxyfluorinated surfaces for biomol. immobilization in sensors)

IT Silanes
RL: RCT (Reactant); RACT (Reactant or reagent)
(organosilanes; refunctionalized oxyfluorinated surfaces for biomol. immobilization in sensors)

IT Fluoropolymers, analysis
RL: ARU (Analytical role, unclassified); DEV (Device component use); NUU (Other use, unclassified); ANST (Analytical study); USES (Uses)
(oxy-; refunctionalized oxyfluorinated surfaces for biomol. immobilization in sensors)

IT Biosensors
Blood analysis
Electric conductors
Electric insulators
Electrodes
Films
Filters
Fluorination
Glow discharge
Hydrophilicity
Hydrophobicity
Immobilization, biochemical
Interfacial energy
Liquid chromatographic columns
Membranes, nonbiological
Plasma
Semiconductor materials
Separators
Wettability
(refunctionalized oxyfluorinated surfaces for biomol. immobilization in sensors)

IT Antigens
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL

(Biological study); USES (Uses)
(refunctionalized oxyfluorinated surfaces for biomol.
immobilization in sensors)

IT Agglutinins and Lectins
RL: ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); RCT (Reactant); ANST (Analytical study); BIOL (Biological study); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(refunctionalized oxyfluorinated surfaces for biomol.
immobilization in sensors)

IT Antibodies
Biopolymers
DNA
Glycoproteins, general, reactions
Immunoglobulins
Ion exchangers
Ionophores
Oligonucleotides
Polynucleotides
Proteins, general, reactions
RNA
Receptors
RL: ARG (Analytical reagent use); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent); USES (Uses)
(refunctionalized oxyfluorinated surfaces for biomol.
immobilization in sensors)

IT Acrylic polymers, analysis
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(refunctionalized oxyfluorinated surfaces for biomol.
immobilization in sensors)

IT Alloys, analysis
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(refunctionalized oxyfluorinated surfaces for biomol.
immobilization in sensors)

IT Ceramics
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(refunctionalized oxyfluorinated surfaces for biomol.
immobilization in sensors)

IT Ferroalloys
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(refunctionalized oxyfluorinated surfaces for biomol.
immobilization in sensors)

IT Metals, analysis
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(refunctionalized oxyfluorinated surfaces for biomol.
immobilization in sensors)

IT Oxides (inorganic), analysis
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(refunctionalized oxyfluorinated surfaces for biomol.
immobilization in sensors)

IT Polycarbonates, analysis
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)

(refunctionalized oxyfluorinated surfaces for **biomol.**
immobilization in sensors)

IT Polyesters, analysis
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(refunctionalized oxyfluorinated surfaces for **biomol.**
immobilization in sensors)

IT Polymers, analysis
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(refunctionalized oxyfluorinated surfaces for **biomol.**
immobilization in sensors)

IT Polyolefins
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(refunctionalized oxyfluorinated surfaces for **biomol.**
immobilization in sensors)

IT Polyurethanes, analysis
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(refunctionalized oxyfluorinated surfaces for **biomol.**
immobilization in sensors)

IT Fluoropolymers, analysis
Fluoropolymers, analysis
Plastics, analysis
RL: ARU (Analytical role, unclassified); NUU (Other use, unclassified); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent); USES (Uses)
(refunctionalized oxyfluorinated surfaces for **biomol.**
immobilization in sensors)

IT Peptides, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(refunctionalized oxyfluorinated surfaces for **biomol.**
immobilization in sensors)

IT pH
(sensors; refunctionalized oxyfluorinated surfaces for **biomol.**
. **immobilization** in sensors)

IT Albumins, analysis
RL: ANT (Analyte); ANST (Analytical study)
(serum; refunctionalized oxyfluorinated surfaces for **biomol.**
immobilization in sensors)

IT Plastics, analysis
RL: ARU (Analytical role, unclassified); NUU (Other use, unclassified); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent); USES (Uses)
(thermoplastics; refunctionalized oxyfluorinated surfaces for
biomol. **immobilization** in sensors)

IT Plastics, analysis
RL: ARU (Analytical role, unclassified); NUU (Other use, unclassified); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent); USES (Uses)
(thermosetting; refunctionalized oxyfluorinated surfaces for
biomol. **immobilization** in sensors)

IT 57-13-6, Urea, analysis
RL: ANT (Analyte); ANST (Analytical study)
(refunctionalized oxyfluorinated surfaces for **biomol.**
immobilization in sensors)

IT 9002-13-5D, Urease, **immobilized**
RL: ARG (Analytical reagent use); DEV (Device component use); RCT

(Reactant); ANST (Analytical study); RACT (Reactant or reagent); USES (Uses)
 (refunctionalized oxyfluorinated surfaces for biomol.
 immobilization in sensors)

IT 27072-45-3, FITC
 RL: ARG (Analytical reagent use); RCT (Reactant); ANST (Analytical study);
 RACT (Reactant or reagent); USES (Uses)
 (refunctionalized oxyfluorinated surfaces for biomol.
 immobilization in sensors)

IT 7429-90-5, Aluminum, analysis 7440-02-0, Nickel, analysis 7440-06-4,
 Platinum, analysis 7440-50-8, Copper, analysis 7440-57-5, Gold,
 analysis 9002-86-2, PVC 9003-53-6, Polystyrene 12597-69-2D, Steel,
 alloys, analysis
 RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST
 (Analytical study); USES (Uses)
 (refunctionalized oxyfluorinated surfaces for biomol.
 immobilization in sensors)

IT 9011-14-7D, Polymethyl methacrylate, surface fluorinated
 RL: ARU (Analytical role, unclassified); DEV (Device component use); NUU
 (Other use, unclassified); ANST (Analytical study); USES (Uses)
 (refunctionalized oxyfluorinated surfaces for biomol..
 immobilization in sensors)

IT 9002-84-0, PTFE 9002-88-4, Polyethylene 24937-79-9, PVDF
 RL: ARU (Analytical role, unclassified); NUU (Other use, unclassified);
 RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent); USES
 (Uses)
 (refunctionalized oxyfluorinated surfaces for biomol.
 immobilization in sensors)

IT 9036-88-8, Mannan
 RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL
 (Biological study); PROC (Process)
 (refunctionalized oxyfluorinated surfaces for biomol.
 immobilization in sensors)

IT 11028-71-0D, Con A, immobilized
 RL: BPR (Biological process); BSU (Biological study, unclassified); RCT
 (Reactant); BIOL (Biological study); PROC (Process); RACT (Reactant or
 reagent)
 (refunctionalized oxyfluorinated surfaces for biomol.
 immobilization in sensors)

IT 50-00-0, Formaldehyde, reactions 67-56-1, Methanol, reactions 76-16-4
 76-19-7, Perfluoropropane 77-77-0, Vinyl sulfone 116-15-4 302-04-5D,
 Isothiocyanate, fluorescent compds. containing 919-30-2, APTES 1333-74-0,
 Hydrogen, reactions 2530-83-8 4420-74-0, 3-
 Mercaptopropyltrimethoxysilane 7732-18-5, Water, reactions 27070-61-7,
 Hexafluoropropane
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (refunctionalized oxyfluorinated surfaces for biomol.
 immobilization in sensors)

L36 ANSWER 42 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1995:792912 HCAPLUS
 DOCUMENT NUMBER: 123:193076
 TITLE: Heterobifunctional crosslinking agents for
immobilizing molecules on plastic
substrates
 INVENTOR(S): Pegg, Randall K.; Saunders, Mary S.
 PATENT ASSIGNEE(S): Nucleic Assays Corp., USA
 SOURCE: U.S., 9 pp. Cont.-in-part of U.S. 5,279,955.
 CODEN: USXXAM

DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 3
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5436147	A	19950725	US 1993-78753	19930616
US 5279955	A	19940118	US 1991-663120	19910301
US 5663318	A	19970902	US 1995-381231	19950131
PRIORITY APPLN. INFO.:			US 1991-663120	A2 19910301
			US 1993-78753	A2 19930616

AB Heterobifunctional crosslinking agents are synthesized that covalently link mols. such as enzymes, cells, proteins and nucleic acids to a plastic substrate. The agents contain a central ring structure having a hydrophobic hydrocarbon chain that binds to a plastic substrate and distal to the hydrophobic chain one or more hydrophilic chains terminating in a reactive group that covalently binds the mol. Immobilized mols. are useful in diagnostic assays or bioreactors. One preferred heterobifunctional crosslinking agent that is prepared is succinylolivetol-N-hydroxysuccinimide.

IC ICM C12N011-06
 ICS G01N033-549; C07C069-34

NCL 435181000

CC 9-15 (Biochemical Methods)
 Section cross-reference(s): 27

ST heterobifunctional crosslinking agent biopolymer immobilization plastic; cell immobilization plastic crosslinking agent; bioreactor cell biomol immobilization plastic; clin analysis biomol cell immobilization plastic

IT Cell
 Immobilization, biochemical
 Immunoassay
 Laboratory ware
 Polymer-supported reagents
 (heterobifunctional crosslinking agents for immobilizing biomols. on plastic)

IT Amino acids, reactions
 Antibodies
 Biopolymers
 Deoxyribonucleic acids
 Enzymes
 Nucleic acids
 Pharmaceuticals
 Proteins, reactions
 Ribonucleic acids
 RL: ARG (Analytical reagent use); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent); USES (Uses)
 (heterobifunctional crosslinking agents for immobilizing biomols. on plastic)

IT Plastics
 RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
 (heterobifunctional crosslinking agents for immobilizing biomols. on plastic)

IT Polycarbonates, reactions
 RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)

(heterobifunctional crosslinking agents for immobilizing biomols. on plastic)

IT Polysulfones, reactions
RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(heterobifunctional crosslinking agents for immobilizing biomols. on plastic)

IT Crosslinking agents
(heterobifunctional, heterobifunctional crosslinking agents for immobilizing biomols. on plastic)

IT Antibodies
RL: ARG (Analytical reagent use); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent); USES (Uses)
(monoclonal, heterobifunctional crosslinking agents for immobilizing biomols. on plastic)

IT Nucleotides, reactions
RL: ARG (Analytical reagent use); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent); USES (Uses)
(poly-, heterobifunctional crosslinking agents for immobilizing biomols. on plastic)

IT Vinyl compounds, reactions
RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(polymers, heterobifunctional crosslinking agents for immobilizing biomols. on plastic)

IT 57-68-1, Sulfamethazine
RL: ANT (Analyte); ANST (Analytical study)
(heterobifunctional crosslinking agents for immobilizing biomols. on plastic)

IT 9003-99-0, Peroxidase
RL: ARG (Analytical reagent use); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent); USES (Uses)
(heterobifunctional crosslinking agents for immobilizing biomols. on plastic)

IT 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9003-53-6, Polystyrene 9003-53-6D, Polystyrene, aminated 24937-78-8, Polyethylene-vinyl acetate 25087-26-7
RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(heterobifunctional crosslinking agents for immobilizing biomols. on plastic)

IT 153719-47-2P
RL: NUU (Other use, unclassified); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(heterobifunctional crosslinking agents for immobilizing biomols. on plastic)

IT 168062-25-7P 168062-27-9P
RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(heterobifunctional crosslinking agents for immobilizing biomols. on plastic)

IT 108-30-5, Succinic anhydride, reactions 108-55-4, Glutaric anhydride 500-66-3, 1,3-Benzenediol, 5-pentyl 645-88-5 7803-49-8, Hydroxylamine, reactions 168062-28-0
RL: RCT (Reactant); RACT (Reactant or reagent)
(heterobifunctional crosslinking agents for immobilizing biomols. on plastic)

IT 168062-22-4P 168062-23-5P 168062-24-6P 168062-26-8P 168062-29-1P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT

(Reactant or reagent)

(heterobifunctional crosslinking agents for immobilizing biomols. on plastic)

L36 ANSWER 43 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1995:646521 HCAPLUS
 DOCUMENT NUMBER: 123:92664
 TITLE: Treatment of oil in water emulsions by ceramic-supported polymeric membranes
 AUTHOR(S): Castro, Robert P.; Cohen, Yoram; Monbouquette, Harold G.
 CORPORATE SOURCE: Dep. Chem. Eng., Univ. California, Los Angeles, CA, 90024, USA
 SOURCE: Critical Issues in Water and Wastewater Treatment, Proceedings of the National Conference on Environmental Engineering -- Boulder, Colo., July 11-13, 1994 (1994), 82-9. Editor(s): Ryan, Joseph N.; Edwards, Marc. American Society of Civil Engineers: New York, N. Y.
 CODEN: 61POAU
 DOCUMENT TYPE: Conference
 LANGUAGE: English

AB A novel membrane was developed by growing polymer chains from the surface of a porous ceramic support, resulting in a composite membrane which combines the mech. properties of the inorg. membrane with the selective interactions of the polymer. The configuration of the grafted polymer brush layer is determined by solvent-polymer interactions, with a hydrophilic polymer being stretched away from the surface by aqueous solns. and collapsed against the surface by organic solvents. This behavior of the grafted chains provides ceramic-supported polymeric (CSP) membranes with unique properties for certain water treatment applications. One application envisioned for these CSP membranes, in which selectivity is affected by interactions between the solvent and the grafted polymer, is cross-flow filtration of an oil-in-water emulsion. In this case, a hydrophilic grafted polyvinylpyrrolidone (PVP) brush layer expanded into the pore volume due to the affinity of polymer for water. These extended grafted chains preferentially allow the passage of water over oil, producing a permeate stream with a lower total organic C content compared to an unmodified membrane. Another advantage of the CSP membrane is in reducing permeate flux decline believed to be caused by the adsorption of oil onto the membrane surface. For the PVP-modified CSP membrane, the grafted polymer alters the membrane surface character from hydrophobic, reducing the tendency for oil adsorption. This phenomenon was demonstrated by comparison of permeate flow rate behavior for both unmodified and graft polymerized (CSP) membranes.

CC 61-5 (Water)

ST Section cross-reference(s): 36, 57

water purifn emulsion breaking polymeric membrane; ceramic supported polymeric membrane sepn filtration; oil in water emulsion sepn filtration; silica membrane polyvinylpyrrolidone graft polymn

IT Polymerization

(graft, grafting poly(vinylpyrrolidone) polymer on silica ceramic membrane to remove oil-in-water emulsions by separation-filtration)

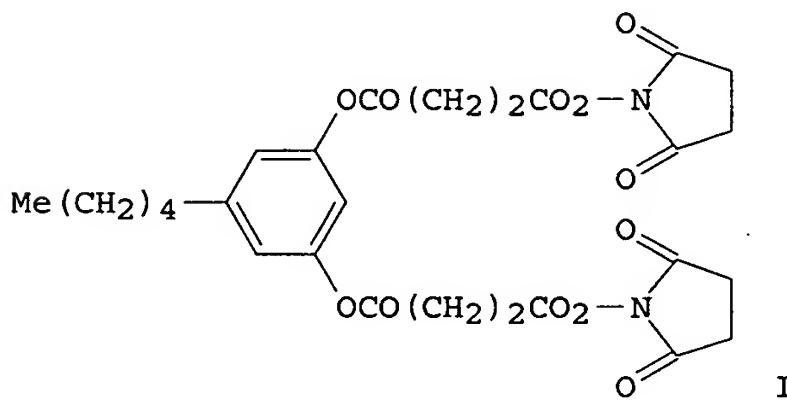
IT 7631-86-9, Silica, uses 9003-39-8, Poly(vinylpyrrolidone)
 RL: DEV (Device component use); NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)

(removal of oil-in-water emulsions by ceramic-supported polymeric membrane separation-filtration)

L36 ANSWER 44 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1994:212065 HCAPLUS
 DOCUMENT NUMBER: 120:212065
 TITLE: Synthesis of heterofunctional crosslinking agents such as succinyl-olivetol-N-hydroxysuccinimide for immobilizing reagents on plastic substrates
 INVENTOR(S): Pegg, Randall K.; Saunders, Mary S.
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S., 6 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 3
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5279955	A	19940118	US 1991-663120	19910301
US 5436147	A	19950725	US 1993-78753	19930616
US 5663318	A	19970902	US 1995-381231	19950131
PRIORITY APPLN. INFO.:			US 1991-663120	A2 19910301
			US 1993-78753	A2 19930616

GI



AB Heterofunctional crosslinking agents are synthesized that covalently link mols. such as enzymes, cells, proteins and nucleic acids to a plastic substrate. The agents contain a central ring structure having a hydrophobic hydrocarbon chain that binds to a plastic substrate and, distal to the hydrophobic chain, ≥ 1 hydrophilic chains terminating in a reactive group that covalently binds the mol. Immobilized mols. are useful in diagnostic assays or bioreactors. A preferred heterofunctional crosslinking agent is succinyl-olivetol-N-hydroxysuccinimide (I), which contains a hydrophobic member for bonding agent to a glass substrate, and hydrophilic members having a terminal reactive group for binding a reagent. I is prepared by reacting succinic anhydride with 5-pentyl resorcinol and condensing carboxylic acid groups with N-hydroxysuccinimide. I greatly increased the binding of an anti-sulfamethazine antibody on microtiter plates.

IC ICM C12N011-06
 ICS G01N033-549; C07C069-34

NCL 435181000

CC 9-14 (Biochemical Methods)
Section cross-reference(s): 27

ST biomol immobilization heterofunctional crosslinking agent; plastic substrate biomol immobilization ; succinylolivetol hydroxysuccinimide biomol immobilization

IT Plastics
Polycarbonates, reactions
Polysulfones, reactions
RL: ANST (Analytical study)
(biomol. immobilization on, with heterofunctional crosslinking agent)

IT Immunoassay
(heterofunctional crosslinking agent or biomol. immobilization on plastic substrate for)

IT Animal cell
Microorganism
Pharmaceuticals
Plant cell
(immobilization of, on plastic substrate with heterofunctional crosslinking agent)

IT Amino acids, reactions
Antibodies
Enzymes
Nucleic acids
RL: RCT (Reactant); RACT (Reactant or reagent)
(immobilization of, on plastic substrate with heterofunctional crosslinking agent)

IT Immobilization, biochemical
(of biomol., on plastic substrate, heterofunctional crosslinking agent for)

IT Reactors
(biocatalytic, heterofunctional crosslinking agent or biomol. immobilization on plastic substrate for)

IT Analysis
(clin., heterofunctional crosslinking agent or biomol. immobilization on plastic substrate for)

IT Antibodies
RL: RCT (Reactant); RACT (Reactant or reagent)
(monoclonal, immobilization of, on plastic substrate with heterofunctional crosslinking agent)

IT Vinyl compounds, polymers
RL: ANST (Analytical study)
(polymers, biomol. immobilization on, with heterofunctional crosslinking agent)

IT 9002-88-4, Polyethylene 9002-88-4D, Polyethylene, derivs. 9003-07-0, Polypropylene 9003-07-0D, Polypropylene, derivs. 25087-26-7, Polymethacrylate 25087-26-7D, Polymethacrylate, derivs.
RL: ANST (Analytical study)
(biomol. immobilization on, with heterofunctional crosslinking agent)

IT 153719-47-2P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of, for heterofunctional crosslinking agent, for biomol. immobilization on plastic substrate)

IT 108-30-5P, Succinic anhydride, reactions
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(reaction of, with pentyl resorcinol, in heterofunctional crosslinking

agent preparation, for biomol. immobilization on plastic substrate)

IT 500-66-3P, 5-Pentyl resorcinol
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (reaction of, with succinic anhydride and hydroxysuccinimide, in heterofunctional crosslinking agent preparation, for biomol. immobilization on plastic substrate)

L36 ANSWER 45 OF 54 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1989:54132 HCPLUS

DOCUMENT NUMBER: 110:54132

TITLE: Functionalization of particulate bonded phase chromatographic supports prepared by silanization of silica gel or controlled pore glass and containing pendant primary alkyl amine groups

INVENTOR(S): Stolowitz, Mark L.; Taketomo, Amy Gwyn

PATENT ASSIGNEE(S): Analytichem International, Inc., USA

SOURCE: PCT Int. Appl., 24 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 8706586	A1	19871105	WO 1987-US901	19870421
W: JP				
RW: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE				
US 4837348	A	19890606	US 1986-859148	19860430
EP 265495	A1	19880504	EP 1987-903147	19870421
R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE				

PRIORITY APPLN. INFO.: US 1986-859148 A 19860430

AB Functionalization results from the activation of the amines by reaction with N,N'-carbonyldiimidazole (CDI), or a related azolide, in anhydrous organic solvent, followed by derivatization of the support. Derivatization results from reaction of the activated support with a functionalizing reagent consisting of a primary or secondary, alkyl or arylamine in an organic solvent, or from an aqueous solution of the amine or its salt. A urea linkage results through which the functionalizing reagent is covalently attached to the support. Derivatization can result from addition of an excess of a single reagent, or as a consequence of the sequential addition of ≥ 2 functionalizing reagents. Chromatog. support preparation in this manner yields materials suitable for affinity, covalent, ion-exchange, and hydrophobic interaction chromatog. of biomols. as well as for the preparation of immobilized reagents. The residual silanol activity associated with the particulate silica or controlled pore glass substrate is effectively masked by application of a hydrophilic barrier. This eliminates the irreversible adsorption of biol. macromols. and low mol. weight amines observed with bonded phase supports which are not further derivatized. The effective hydrophilic barrier results in masking residual silanol activity and the hydrophobic nature of the silane backbone. Aminopropyl silica gel was activated with CDI and triethylamine in CH₂Cl₂ and the activated gel was filtered and washed and treated with glycine in 0.1 N NaCO₃ buffer to give N-carboxymethyl-N'-propylsilylurea silica for preparative ion exchange chromatog.

IC ICM C07F007-10

CC 9-3 (Biochemical Methods)
 ST particulate bonded phase chromatog support functionalization; affinity chromatog support functionalization; ion exchange chromatog support functionalization; **hydrophobic** interaction chromatog support functionalization
 IT Silica gel, compounds
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (aminopropylated, reaction products, with carbonyldiazolides and functionalizing groups, preparation of, as chromatog. resin)
 IT Chromatography, column and liquid
 (**hydrophobic**, particulate bonded phase supports for, functionalization of)
 IT 530-62-1D, N,N'-Carbonyldiimidazole, reaction products with aminopropyl silica gel 6160-65-2D, N,N'-Thiocarbonyldiimidazole, reaction products with aminopropyl silica gel 14667-54-0D, reaction products with aminopropyl silica gel 37868-93-2D, reaction products with aminopropyl silica gel 41864-22-6D, reaction products with aminopropyl silica gel 43183-39-7D, reaction products with aminopropyl silica gel 65610-66-4D, reaction products with aminopropyl silica gel 68985-05-7D, reaction
 RL: ANST (Analytical study)
 (in functionalization of particulate bonded phase chromatog. supports prepared by silanization)
 IT 56-12-2, 4-Aminobutyric acid, reactions 56-40-6, Glycine, reactions 60-23-1, Cysteamine 60-32-2, 6-Aminohexanoic acid 64-04-0, Phenethylamine 77-86-1 79-17-4, Aminoguanidine 107-35-7, Taurine 109-73-9, n-Butylamine, reactions 111-74-0 111-86-4, n-Octylamine 124-09-4, 1,6-Diaminohexane, reactions 556-50-3, Diglycine 1122-90-3 6283-24-5 27598-85-2, Aminophenol 89415-43-0
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with activated aminopropyl silica gel, in preparation of chromatog. resin)
 IT 919-30-2, 3-Aminopropyltriethoxysilane 3069-30-5, 4-Aminobutyltriethoxysilane 3663-43-2 5089-72-5 13822-56-5, 3-Aminopropyltrimethoxysilane 118406-69-2
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with activated silica, in preparation of functionalized bonded phase chromatog. supports)

L36 ANSWER 46 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1986:80433 HCAPLUS
 DOCUMENT NUMBER: 104:80433
 TITLE: Aqueous electrically conductive compositions
 INVENTOR(S): Friedli, Hans R.; Lau, Philip Y.
 PATENT ASSIGNEE(S): Dow Chemical Co., USA
 SOURCE: U.S., 3 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 4556506	A	19851203	US 1984-682961	19841218
PRIORITY APPLN. INFO.:			US 1984-682961	19841218
AB An aqueous elec. conductive coating composition contains (1) a bisphenol A tetramethylene sulfonium zwitterionic monomer 0.3-15; (2) an alkali metal				

salt of partially hydrolyzed (6-10%) polyacrylamide (weight-average mol. weight 200,000-500,000) 5-20; (3) a nonionic surfactant (having HLB value of 11-15) 0.5-20; (4) metallic particles (flakes and powders of Ni, Cu, Al or their combination) 20-60 weight%; and (5) balance H₂O. Among suitable surfactants, 2,4,7,9-tetramethyl-4,7-dihydroxy-5-decyne is included. Thus, a composition containing polyacrylamide 2.14, zwitterion monomer 8.15, surfactant (Surfynol 104) 3.97, Ni flakes 45, and H₂O 40.39 weight% was brushed on a polystyrene plaque and cured. The coating had a resistivity of 0.342 Ω-cm with a thickness of 0.09 mm. Other polymer substrates can also be used. The composition does not cause air pollution during application and is useful in the preparation of conductive adhesives, conductive inks, conductive tapes, printed circuits, and electromagnetic and radio-frequency shielding.

IC ICM H01B001-22
 NCL 252512000
 CC 76-2 (Electric Phenomena)
 Section cross-reference(s): 38
 ST aq elec conductive coating compn; polyacrylamide coating compn; acrylamide polymer coating compn; metal particle elec conductive coating compn; bisphenol A zwitterion conducting coating; polystyrene elec conductive coating; styrene polymer elec conductive coating; methylene sulfonium zwitterion conductive coating; sulfonium tetramethylene zwitterion conductive coating
 IT Electric conductors
 (polyacrylamide coating compns., containing metal particles and zwitterion monomers and surfactants)
 IT 80-05-7D, tetramethylene sulfonium derivative 126-86-3
 RL: USES (Uses)
 (elec. conductive coatings from polyacrylamide containing)
 IT 7429-90-5, uses and miscellaneous 7440-02-0, uses and miscellaneous 7440-50-8, uses and miscellaneous
 RL: USES (Uses)
 (elec. conductive coatings from polyacrylamide containing flakes of)
 IT 9003-53-6
 RL: USES (Uses)
 (elec. conductive coatings on, from polyacrylamide containing metallic particles and zwitterion monomers and surfactants)

L36 ANSWER 47 OF 54 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1985:414571 HCPLUS
 DOCUMENT NUMBER: 103:14571
 TITLE: Ethylenically-unsaturated dextrin composition for preparing a durable hydrophilic photopolymer
 INVENTOR(S): Fohrenkamm, Elsie A.; Rousseau, Alan D.
 PATENT ASSIGNEE(S): Minnesota Mining and Manufacturing Co., USA
 SOURCE: U.S., 9 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4511646	A	19850416	US 1983-471828	19830303
PRIORITY APPLN. INFO.:			US 1983-471828	19830303

AB A photopolymeric composition useful for preparation of a hydrophilic layer in a pos.-acting H₂O-developable lithog. plates consists of

(1) an ethylenically unsatd. dextrin oligomer, (2) ≥1 hydroxyfunctional **acrylamide** monomer, (3) an inorg. solid particulate filler material, and (4) a photoinitiator system. Thus, a brush-grained Al support was coated with a composition containing an ethylenically unsatd. urethane oligomer 9.1, diphenyliodonium hexafluorophosphate 0.4, Michler's ketone 0.4, 2-methacryloyloxyethyl phosphate 0.1, 1,1,2-trichloroethylene 10, MeCOEt 10, quartz (8 µm particles) treated with 5% µ-methoxyacryloxypropyltrimethoxysilane 10 g, dried, cured with Hg metal halide lamp irradiation, overcoated with a dispersion containing **acrylamidomethyldexrin** (prepared by reaction of Stadex 140 with N-methylolacrylamide in the presence of **acrylic acid** and phenothiazine) 3, H₂O 27, 1,3-diacrylamide-2-hydroxyprone 1.3, 31% aqueous 1-**acrylamido**-2,3-dihydroxypropane 2.1 g, 10% aqueous triethylamine (to adjust pH to 8.5), 10% aqueous Triton X-100 0.2, Colamyl red (50% solids) 0.9, Syloid 244 1.93, 2% 4,4'-bis(N-2-carboxyethyl-N-methylamino)benzophenone di-Na salt 7.7, diphenyliodonium hexafluorophosphate 0.1 g, dried, imagewise exposed, H₂O developed and mounted on a Miehle sheet fed press and an abrasive ink was used to print copies. After 33,000 impressions the only sign of wear was a darkening in the 95 and 97% screens.

IC ICM G03C001-70
ICS C08L003-02

NCL 430283000

CC 74-4 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST lithog photopolymer unsatd dextrin oligomer; **hydrophilic layer** lithog printing plate

IT Lithographic plates
(photopolymeric composition for preparation of durable **hydrophilic layers** of, ethylenically-unsatd. dextrin oligomer for)

IT Silica gel, uses and miscellaneous
RL: PREP (Preparation)
(photopolymeric composition for preparation of **hydrophilic layer** of lithog. printing plate containing, ethylenically-unsatd. dextrin oligomer for)

IT 924-42-5
RL: USES (Uses)
(photopolymeric composition for **hydrophilic layer** of lithog. printing plate containing, photoinitiator system for, consisting of free radical initiator and Michler's ketone analog sensitizer)

IT 90-94-8 100-61-8, uses and miscellaneous 2530-85-0 7631-86-9
, uses and miscellaneous 14808-60-7, uses and miscellaneous 24599-21-1 79771-30-5
RL: USES (Uses)
(photopolymeric composition for **hydrophobic layer** of lithog. plate containing, photopolymeric composition for **hydrophilic layer** for, containing ethylenically-unsatd. dextrin oligomer)

IT 42521-68-6 58109-40-3 90698-35-4 91576-33-9 96603-26-8
RL: USES (Uses)
(photopolymeric composition for preparation of **hydrophilic layer** of lithog. plate containing ethylenically-unsatd. dextrin oligomer and)

IT 924-42-5D, reaction product with dextrin 9004-53-9D, reaction product with methylolacrylamide
RL: USES (Uses)
(photopolymeric composition for preparation of **hydrophilic layer** of lithog. printing plate containing)

IT 9004-53-9D, reaction product with methylolacrylamide
RL: USES (Uses)

(photopolymeric composition for preparation of **hydrophilic**
layer of lithog. printing plate containing, photoinitiator system
for)

L36 ANSWER 48 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1984:53307 HCAPLUS
 DOCUMENT NUMBER: 100:53307
 TITLE: Asphalt emulsions containing crosslinkable polymers
 PATENT ASSIGNEE(S): Badische Petrochemical Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 58127760	A2	19830729	JP 1982-10388	19820126
			JP 1982-10388	19820126

PRIORITY APPLN. INFO.:
 AB . Emulsions giving coatings with heat and creep resistance and low-temperature flexibility contain carbonyl group-containing copolymer with **glass** temperature $\leq 30^\circ$, a compound containing ≥ 2 hydrazine groups (0.02-1 mol N₂H₄/carbonyl group), and 2-560 phr asphalt. Thus, a 48% polymer [86002-37-1] emulsion (glass temperature -17°) was prepared from **styrene** 240, 2-ethylhexyl acrylate 215, **acrylic acid** 10, acrolein 25, and **acrylamide** 10 parts neutralized with NH₃. A 35:65 mixture (as solids) of this emulsion and an emulsion of asphalt (softening point -75°) 62, xylene 15, nonionic surfactant 2, and water 21% containing 0.5 equivalent adipic acid dihydrazide [1071-93-8]/carbonyl group was cast on **glass** and dried at room temperature for 7 days and at 40° for 2 days to give a 1.5-mm film with tensile strength 5.6 kg/cm², elongation 650% (after 1 day at 20°) or 240% (after 1 h at 5°), creep 5.5% (after 7 h at 80°), residual strain 50% (after 2:1 stretching at 20° and 65% relative humidity for 4 days) and good roller and brush coatability, compared with 2.0 kg/cm², 190%, too brittle to measure, breakage after 15 min, and unmeasurable, resp., without copolymer or hydrazide.

IC C08L095-00; C08K005-24; C08L057-10
 ICA C09D003-24
 CC 42-7 (Coatings, Inks, and Related Products)
 Section cross-reference(s): 51
 ST **acrylic acid** copolymer coating; **acrylate** copolymer coating; **acrolein** copolymer coating; **acrylamide** copolymer coating; **styrene** copolymer coating; adipic acid hydrazide ccoating; hydrazide asphalt emulsion coating

L36 ANSWER 49 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1982:113494 HCAPLUS
 DOCUMENT NUMBER: 96:113494
 TITLE: Laminating a supported photosensitive layer to a substrate
 INVENTOR(S): Weiner, Jerold Samuel; Small, Samuel
 PATENT ASSIGNEE(S): du Pont de Nemours, E. I., and Co., USA
 SOURCE: Eur. Pat. Appl., 28 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 40842	A1	19811202	EP 1981-103965	19810523
EP 40842	B1	19840815		
R: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE BR 8103186	A	19820209	BR 1981-3186	19810522
AT 9043	E	19840915	AT 1981-103965	19810523
ZA 8103495	A	19830126	ZA 1981-3495	19810525
CA 1168140	A1	19840529	CA 1981-378307	19810526
JP 57021891	A2	19820204	JP 1981-81816	19810527
JP 01043943	B4	19890925		
PRIORITY APPLN. INFO.:			US 1980-153637	A 19800527
			EP 1981-103965	A 19810523

AB The lamination of a photosensitive layer to a support useful in printed circuit fabrication and lithog. plate production comprises formation of a thin interface layer of H₂O between a support and a photosensitive layer (the interface is later absorbed by the photosensitive layer during lamination process). Thus, a surface of a support made of fiberglass-reinforced epoxy resin and Cu clad cleaned by mech. scrubbing in a heavy spray of H₂O was wetted with finely divided droplets of H₂O by an air brush and laminated with a photoresist film (obtained by coating 0.00127 cm thick poly(ethylene terephthalate) web containing on its reverse side a thin layer of Carnauba wax and poly(vinylidene chloride) with a composition containing styrene-maleic anhydride copolymer partially esterified with iso-Bu alc. 40, Et acrylate-Me methacrylate-acrylic acid copolymer 12.6, N-tert-octyl acrylamide-Me methacrylate-acrylic acid -hydroxypropyl methacrylate-tert-butylaminoethyl methacrylate copolymer 5, polyoxyethylated trimethylpropane 10, trimethylpropane triacrylate 12.5, benzophenone 4, 4,4'-bis(dimethylamino)benzophenone 0.7, 2,2'-bis(2-chlorophenyl)-4,4',5,5'-tetraphenylbiimidazole 3, leuco crystal violet 0.4, benzotriazole 0.2, 1,4,4-trimethyl-2,3-diazabicyclo-[3.2.2]-non-2-ene-2,3-dioxide 0.06, Victoria Green 0.03, CH₂Cl₂ 200, MeOH 15, polyethylene beads (85% of which had diams. <10 and 15% had diams. 10-20) 13 weight parts to give 0.00254 cm dry layer) by hot nip rolls at 230°F to give a product with excellent lamination.

IC G03F007-16; G03C001-74

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

L36 ANSWER 50 OF 54 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1980:95743 HCPLUS

DOCUMENT NUMBER: 92:95743

TITLE: Silica coating compositions

INVENTOR(S): Miyosawa, Yoshiaki

PATENT ASSIGNEE(S): Kansai Paint Co., Ltd., Japan

SOURCE: Jpn. Tokyo Koho, 8 pp.

CODEN: JAXXAD

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 54022230	B4	19790804	JP 1976-86167	19760720

JP 53011989	A2	19780202		
GB 1562651	A	19800312	GB 1977-30330	19770719
DE 2732753	A1	19780126	DE 1977-2732753	19770720
DE 2732753	B2	19791004		
DE 2732753	C3	19800619		
CA 1090551	A1	19801202	CA 1977-283148	19770720
US 4330446	A	19820518	US 1979-39954	19790517
PRIORITY APPLN. INFO.:				
			JP 1976-86167	A 19760720
			JP 1977-7107	A 19770125
			JP 1977-36545	A 19770331
			JP 1977-38354	A 19770404
			US 1977-816969	A1 19770719

AB Water-thinned silica compns. forming hard, transparent coatings with excellent abrasion, fire, and corrosion resistance contained hydroxy and carboxy group-containing acrylic polymers and silane derivs. Thus, a composition from 20% aqueous 24:15:140:38:68:15 acrylic acid -N-(butoxymethyl)acrylamide-Et acrylate-2-hydroxyethyl acrylate-Me methacrylate-styrene copolymer 2-(dimethylamino)ethanol salt [71926-43-7] 375, Snowtex N 125, and KBM 503 [2530-85-0] 1.5 g was brushed onto steel and baked 30 min at 180° to give a coating with pencil hardness 4 H, adhesion (cross-cut) 95/100, water resistance 216 h, abrasion 30 mg, and flammability test carbonization only, compared with HB, 60/100, 144 h, 65 mg, and inflammation with cracking, resp., for a control without KBM 503.

IC C08F008-42

CC 42-10 (Coatings, Inks, and Related Products)

Section cross-reference(s): 55

ST acrylic coating silica silane deriv; fire resistant acrylic silica coating

IT Coating materials

(water-thinned, acrylic polymers-silica-silane derivs., fire-resistant, for steel)

IT 7631-86-9, uses and miscellaneous

RL: USES (Uses)

(acrylic polymer coatings containing silane derivs. and, fire-resistant, for steel)

IT 2530-83-8 2530-85-0 17985-63-6 72779-68-1

RL: USES (Uses)

(acrylic polymer coatings containing silica and, fire-resistant, for steel)

IT 71926-43-7 72689-08-8 72689-09-9 72860-75-4

RL: TEM (Technical or engineered material use); USES (Uses)

(coatings, containing silica and silane derivs., fire-resistant, for steel)

L36 ANSWER 51 OF 54 HCAPLUS. COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1969:492579 HCAPLUS

DOCUMENT NUMBER: 71:92579

TITLE: Dyeing and impression method for fibrous substrates

PATENT ASSIGNEE(S): Farbenfabriken Bayer A.-G.

SOURCE: Fr., 8 pp.

CODEN: FRXXAK

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.

KIND

DATE

APPLICATION NO.

DATE

 FR 1525629 19680517
 DE 1619478 DE
 GB 1170515 GB
 US 3536440 19700000 US

PRIORITY APPLN. INFO.: DE 19660603
 AB Cotton and regenerated cellulose fibers were dyed or printed fast shades with aqueous crosslinkable copolymer emulsions. Thus, 400 parts of a mixture of

Bu acrylate 56, **styrene** 30, β -hydroxypropyl methacrylate 4, **acrylamide** 2.5, and H₂C:CHCONHCH₂NHCOCH₂Cl 7.5% were added to 1:20 nonylphenol-ethylene oxide adduct 20, alkylsulfonate 2, naphthalenesulfonic acid-HCHO condensate 2, and H₂O 550 parts, 20% of the resulting emulsion was heated 10 min. under N at 55°, 0.24 part K₂S₂O₈ and 0.32 part Na₂S₂O₅, each dissolved in 5 parts H₂O added, the remaining 80% of the emulsion mixed with 0.96 part K₂S₂O₈ in 20 ml. H₂O and 1.28 parts Na₂S₂O₅ in 20 ml. H₂O and added regularly during 3 hrs. to the previous emulsion part, and the mixture held 3-4 hrs. and stirred 4 hrs. to give a 37-9% yield of non-coagulating dispersion. The dispersion (200 parts) was mixed with 30% aqueous carbon black dispersion 100, 4% aqueous tragacanth gum 50, cetyl alc.-ethylene oxide adduct 8, H₂O 182, 33% aqueous K₂CO₃ 30, and naphtha 450 parts to give a viscous paste for printing cotton-rayon fabric deep black shades. The printed fabric was dried 8 min. at 98° in the presence of steam, 5 min. at 130°, and 2 min. at 150° to give a product resistant to washing, crease, and brushing. Other monomers used for preparing the crosslinkable copolymers were N-(methoxymethyl)**methacrylamide**, 2-(chloroacetoxy)-1-propyl methacrylate, N-(chloroacetamidocarbonyl)methacryl amide, vinyltoluene, 2-ethylhexyl methacrylate, 2-(chloroacetoxy)-1-propyl acrylate, N-(chloroacetamidomethyl)**methacrylamide**, acrylonitrile, butadiene, and methacrylic acid. Other pigments used were perchlorinated phthalocyanine-Cu, TiO₂ and azo dyes.

IC C08F; D06P

CC 39 (Textiles)

IT Textile printing

(pastes for, **acrylamide** derivative-vinyl compound polymers containing pigments, for cellulosic textiles)

IT **Styrene**, ar-methyl-

RL: USES (Uses)

(polymers with **acrylamide** derivs. and vinyl compds., textile printing pastes from pigments and)

IT 79-41-4, Methacrylic acid, uses and miscellaneous 100-42-5, **Styrene**, uses and miscellaneous 106-99-0, 1,3-Butadiene, uses and miscellaneous 107-13-1, Acrylonitrile, uses and miscellaneous 140-88-5, **Acrylic acid** ethyl ester 141-32-2, **Acrylic acid** butyl ester 688-84-6 923-26-2 16975-74-9 16975-75-0 21369-74-4

RL: USES (Uses)

(polymers with **acrylamide** derivs. and vinyl compds., textile printing pastes from pigments and)

IT 79-06-1, **Acrylamide** 79-39-0 3644-12-0 16359-59-4 21369-72-2 21369-73-3

RL: USES (Uses)

(polymers with vinyl compds., textile printing pastes from pigments and)

L36 ANSWER 52 OF 54 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1966:508752 HCPLUS
 DOCUMENT NUMBER: 65:108752

ORIGINAL REFERENCE NO.: 65:20301h,20302a-e
 TITLE: Stabilizing polymers with alkenoylamido and
 alkenoyloxy-phenylbenzotriazoles against ultraviolet
 light
 INVENTOR(S): Milionis, Jerry P.; Hardy, William B.; Baitinger,
 William F., Jr.
 PATENT ASSIGNEE(S): American Cyanamid Co.
 SOURCE: 8 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: Unavailable
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3272891	-----	19660913	US	19641014

GI For diagram(s), see printed CA Issue.

AB Continuation-in-part of U.S. 3,159,646 (CA 62, 7951f). The title compds. overcome solvent leaching and evaporation during heat treatment of resins, ensuring retention in the plastic substrate upon uv exposure. The stabilizers have the general formula I, or are the dimethylacetamide-soluble, low-viscosity homopolymers of I, in which R and R₁ are lower-alkyl, alkoxy, halogen, nitro, carboxy, sulfo, or sulfonamide; R₂ is alkenoylamino with a polymerizable CH₂:C group; R₃ is alkenoyloxy with a polymerizable CH₂:C group; m and n are each 0, 1, or 2; p and q are 0, 1, 2, or 3, ≥1 of p and q being >0; and R₂ and R₃ are substituents on the carbocyclic rings. Synthesis of I is illustrated as follows: o-Nitroaniline (55.2 parts by weight) is diazotized with 320 parts by volume concentrated HCl and 27.6 parts by weight NaNO₂. The clear diazonium chloride solution is added dropwise to a solution cooled to -5 to +5° of 65.6 parts by weight m-aminophenol in 2000 parts by volume H₂O containing 120 parts

by volume 5N HCl. The crude product is the HCl salt of the amine. A slurry in H₂O of this azo compound is treated with dilute NaOH to give the free azo compound, which is triazoltized immediately by 78.5 parts Zn dust and 480 parts by volume 5N NaOH. Recrystn. 3 times from aqueous EtOH gives orange-red needles of 2-(4-amino-2-hydroxyphenyl)-benzotriazole (II). A slurry of 2.94 parts II in 75 parts by volume PhCl is added portionwise at -5 to 0° to 1.18 parts acrylyl chloride in 25 parts by volume PhCl to which 1.19 parts pyridine and 0.1 part hydroquinone have been added. The mixture is stirred at this temperature for a short time, then at 25-30° until reaction is complete. Recrystn. from alc. and H₂O, then PhCl, yields yellow solid 2-(4-acrylamido-2-hydroxyphenyl)benzotriazole (III). III (0.5 g.) and 0.05 g. Bz₂O₂ are mixed with 4.5 g. styrene, sealed under N₂, and heated at 120° for 100 hrs.

The copolymer is dissolved in PhMe, precipitated with excess EtOH, and washed with hot alc. The product contains 75 mg. III/g. of copolymer. A PhMe solution of the copolymer is brushed on a white pine panel. A polystyrene solution in PhMe is also applied to a similar panel. These 2 panels and a 3rd panel with no overcoating are placed in a Fade-Ometer for 14 hrs. The control samples became badly discolored, but the sample containing the styrene-III copolymer was only slightly discolored. Various other I copolymers gave similar results with polystyrene, acrylonitrile-styrene copolymers, polyester-styrene copolymers, poly(Bu methacrylate), poly(Me methacrylate), a butadiene-styrene copolymer, poly(vinyl fluoride), etc.

NCL 260895000

CC 48 (Plastics Technology)

IT Acrylonitrile polymers (including copolymers)
 (with acryloyl derivs. of (aminohydroxyphenol benzotriazoles and
styrene, ultraviolet light stabilization of polymers by)

IT 1,3-Butadiene polymers, with acrylonitrile-**styrene** polymers
 (with acryloyl derivs. of (aminohydroxyphenyl)benzotriazoles and
acrylamide or styrene, ultraviolet light
 stabilization of polymers by)

IT 3234-12-6, p-Cresol, 2-(5-amino-2H-benzotriazol-2-yl)- 3234-16-0,
Acrylic acid, 4-(2H-benzotriazol-2-yl)-3-hydroxyphenyl
 ester 3234-22-8, Resorcinol, 4-(2H-benzotriazol-2-yl)-, 1-methacrylate
 3234-33-1, Phenol, 5-amino-2-(2H-benzotriazol-2-yl)- 3234-35-3, Phenol,
 o-(5-amino-2H-benzotriazol-2-yl)- 3234-36-4, **Acrylamide**,
 N-[2-(o-hydroxyphenyl)-2H-benzotriazol-5-yl]- 3322-95-0, Acrylanilide,
 4'-(5-**acrylamido**-2H-benzotriazol-2-yl)-3'-hydroxy- 3322-97-2,
 Benzenesulfonic acid, 4-(5-**acrylamido**-2H-benzotriazol-2-yl)-3-
 hydroxy-
 (as ultraviolet light stabilizer for polymers)

IT 9003-54-7, Acrylonitrile, polymer with **styrene**
 (color-stable)

IT 79-10-7, **Acrylic acid**
 (ester polymers, ultraviolet stabilizers for, polymers or acryloyl
 derivs. of (aminohydroxyphenyl)benzotriazoles as)

IT 100-42-5, **Styrene**
 (polymerization of, with acryloyl derivs. and
 (aminohydroxyphenyl)benzotriazoles, acrylonitrile, butadiene and
 polyesters)

IT 9003-17-2, 1,3-Butadiene, homopolymer
 (polymerization of, with acryloyl derivs. of
 (aminohydroxyphenyl)benzotriazoles and **acrylamide or**
styrene)

IT 79-06-1, **Acrylamide**
 (polymerization of, with acryloyl derivs. of
 (aminohydroxyphenyl)benzotriazoles and butadiene to ultraviolet
 light-resistant polymer)

IT 107-13-1, Acrylonitrile
 (polymerization of, with acryloyl derivs. of
 (aminohydroxyphenyl)benzotriazoles and **styrene**)

IT 9003-53-6, **Styrene** polymers
 (with acryloyl derivs. of (aminohydroxyphenyl)benzotriazoles and unsatd.
 compds., as ultraviolet light stabilizers for polymers)

L36 ANSWER 53 OF 54 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1966:85558 HCPLUS
 DOCUMENT NUMBER: 64:85558
 ORIGINAL REFERENCE NO.: 64:16134h,16135a-d
 TITLE: Emulsion paints that adhere to weathered painted
 surfaces
 INVENTOR(S): Glavis, Frank J.; Keighley, William J.; Haag, Thomas
 H.
 PATENT ASSIGNEE(S): Rohm & Haas Co.
 SOURCE: 54 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: Unavailable
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
BE 649321		19641216	BE	

PRIORITY APPLN. INFO.: US 19630617
 AB The paints are based upon aqueous dispersions of: (1) normally H₂O-insol. vinyl ester, acrylic ester, or vinylhydrocarbon homo- or copolymers mixed with (2) H₂O-soluble ammoniacal salts of relatively low-mol.-weight copolymers that contain 2-15% α,β-ethylenically unsatd. carboxylic acids and anionic or nonionic surfactants. A polymer unit containing ureido groups consists of ≥ 0.25% by weight of the total mixture of polymers (1) and (2); of this mixture, 15-65% is (1). Thus, a mixture was prepared from 100 parts of a 49%-solids emulsion of a 55:39:5:1 copolymer of Et acrylate (I), Me methacrylate (II), N-[β-(α-methacryloyloxyacetamido)ethyl]-N,N'-ethyleneurea, and methacrylic acid (III), which contained 3% by weight of the monomers used of an emulsifier made by condensation of tert-octylphenol (IV) with 16 moles ethylene oxide (V); and 100 parts of an aqueous solution containing 20% of a copolymer made from 95%

I and 5% III by using K₂S₂O₈ as catalyst in the presence of 0.5 part Na lauryl sulfate and 2 parts dodecyl mercaptan, which was subsequently neutralized with NH₄OH; and 12 parts of the reaction product of IV with 36 moles of V. A portion of the mixture was **brushed** on wood covered with oil paint that had been weathered to a powdery **surface**; it adhered perfectly. A similar mixed polymer in which the 1st component was made from I, II, N-vinylthiopropyl-N,N'-propyleneurea, and III in a 60:29:10: 1 ratio also adhered well when **brush-coated** over a coating that had been chalked by previous weathering. Similar results were obtained by using mixts. in which the 1st component was made by using N-methylol-N-methacryloyloxyethylurea, β-ureidoethyl vinyl ether, N-vinyl-N,N'-ethyleneurea, N-(β-methacryloylamidoethyl)-N,N'-ethyleneurea, N-methacryloylamidomethyl-N,N'-ethylene urea, N-[β-(α-methacryloyloxyacetamido)propyl]-N,N' - propyleneurea, N-[β-(β-carbomethoxyacryloylamino)ethyl]-N,N'-ethyleneurea, N-diethylaminoethyl-N'-vinyl-N,N'-ethyleneurea, and β-(N,N-ethyleneureido)ethyl acid fumarate (cf. Belg. 618,087, CA 58, 11490e); or when the 2nd component was based upon a copolymer of mol. weight 10,000 prepared from I, III, and β-ureidoethyl methacrylate in a 80:15:5 ratio. The dispersions, when pigmented according to U.S. 2,581,414 (CA 46, 3298a) were equally adherent to weathered substrates. In clear form, they were used as primers over weathered asbestos shingles, to which adherent, durable, acrylic coatings were applied.

CC 52 (Coatings, Inks, and Related Products)

IT Paint

(for weathered painted surfaces, adherent emulsion type, with NH₄ salts of ureide polymers with acrylates, methacrylates, etc.)

IT Surface-active substances

(paint containing, for weathered painted surfaces)

IT Acrylic acid, butyl ester polymers with styrene, ureides

Styrene polymers, with acrylates, ureides (etc., NH₄ salts, for paint)

IT 2-Imidazolidinethione, 1-vinyl-, homopolymer

2-Imidazolidinone 1-acetyl-, 1-[2-(dimethylamino)ethyl]-3-vinyl-, homopolymer

2-Imidazolidinone 1-acetyl-, 1-vinyl-, homopolymer

2-Imidazolidinone 1-acetyl-, methyl-1-[3-(vinylthio)propyl]-, homopolymer

Acrylamide, 2-methyl-N-[(2-oxo-1-imidazolidinyl)methyl]-, homopolymer

Acrylamide, 2-methyl-N-[2-(2-oxo-1-imidazolidinyl)ethyl]-, homopolymer

Acrylic acid, ethyl ester polymers with methacrylates

and ureides, NH₄ salts
 Glycolamide, N-[2-(2-oxo-1-imidazolidinyl)ethyl]-, methacrylate, homopolymer
 Glycolamide, N[1-methyl-2-(methyl-2-oxo-1-imidazolidinyl)ethyl]-, homopolymer
 Maleamic acid, N-[2-(2-oxo-1-imidazolidinyl)ethyl]-, methyl ester, polymers
 Methacrylic acid, 1-ester with 1-(2-hydroxyethyl)-3-(hydroxymethyl) urea, polymers
 Methacrylic acid, esters with N-[2-(2-oxo-1-imidazolidinyl)ethyl]glycolamide, polymers
 Methacrylic acid, esters with N-[2-(2-oxo-1-imidazolidinyl)ethyl]glycolamide, polymers
 Urea, (2-hydroxyethyl)-, methacrylate, polymers
 Urea, 1-(2-hydroxyethyl)-3-(hydroxymethyl)-, 1-methacrylate, polymers
 Urea, [2-(vinyloxy)ethyl]-, homopolymer
 (paint containing)

L36 ANSWER 54 OF 54 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1964:419162 HCAPLUS
 DOCUMENT NUMBER: 61:19162
 ORIGINAL REFERENCE NO.: 61:3308b-g
 TITLE: Modified vinyl polymer coating compositions
 INVENTOR(S): Shaw, Robert S.; Dupont, John A.
 PATENT ASSIGNEE(S): Rohm & Haas Co.
 SOURCE: 52 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: Unavailable
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
BE 631720	----	19631118	BE	-----
FR 1363352	----		FR	-----
GB 1007723	----		GB	-----
US 3258438	----	1966	US	-----

PRIORITY APPLN. INFO.: US 19620501

AB A stable polymeric dispersion is produced, as particles of size 0.1-2 μ, in an essentially aliphatic hydrocarbon solvent (b. -50 to 520°), when a vinyl monomer (I) or mixture of monomers is added to a mixture of a linear polyester (II), modified by a drying oil, and a polyacrylate (III), soluble in that oil, at a temperature from room to 125°, in the presence of a conventional initiator. I include monomers which, when polymerized or copolymerized, give a polymer insol. in aliphatic hydrocarbon solvents, e.g. acrylonitrile, acrylic acid, methacrylic acid, itaconic acid, and their esters with C1-4 alcs.; II consist, e.g., of 60% polyester of phthalic acid and glycerol in linoleic acid or 75% polyester of terephthalic acid and trimethylolethane in linseed oil; and III of polyesters of acrylic and methacrylic acids with C4-18 alcs. The amount of the mixture of II (modified) and HI (weight ratio 90:10-10:90) is 5-20% by weight of the total of monomer and mixture, and the amount of solvent is such as to give a 5-40% or more of a solution of the mixture

of II (modified) and III. The amount of initiator is 0.001-10% by weight of I. II and (or) III may be modified by ≤20% of a vinyl monomer containing a polar group, e.g. acrylic acid, methacrylic acid, maleic anhydride, or acrylamide. This modifier and II or III are heated at 45-150° for 5 hrs. with an initiator to produce a graft copolymer. A small amount (<25%) of aromatic vinyl monomer, e.g.

styrene, or higher esters of acrylic or methacrylic acids may be incorporated, provided that the product is still insol. The viscosity of the dispersion is 0.3-10 poises at ambient temperature and 40% concentration, and the

dry extract 1-55% of the solution. The dispersion may be used to impregnate or coat cloth, paper cartons, wood, metal, or ceramics, and as a varnish. The product, when cured, has a high gloss, transparency, and excellent adhesion to the substrate. The min. temperature to form coatings varies from -40 to 150°, depending upon the constituents. Sheets of film may be cast, and the dispersion will accept pigments or colorants. Thus, a mixture of soybean oil (mol. weight 2200) 360, glycerol 80, phthalic anhydride 80, sebacic acid 109, poly(iso-Bu methacrylate) (mol. weight 100,000) 30 parts in solvent naphtha (b. 117-145°) 600 parts was placed in a reactor and 3 parts crystallizable acrylic acid and 0.2 part lauroyl peroxide were added. O was flushed out (to <0.1%) by a stream of N, and the mixture heated for 2 hrs. at 85° in a stream of N. To this mixture, heated to 90°, Et acrylate 108, Me methacrylate 108, Bz202 0.3, lauroyl peroxide 0.2, and, slowly over 3 hrs., a mixture of Et acrylate 160, Me methacrylate 161, Bz202 0.5, lauroyl peroxide 0.3, and solvent naphtha 275 parts were added. Finally, during 3 hrs., a solution of 1.2 parts lauroyl peroxide in 25 parts solvent naphtha was added, and the mixture stirred at 90° for 1 hr. The dispersion thus formed had a dry extract consisting of 39.7% polymer and was easily applied by brush or spray to Al or steel, cured at 149° for 30 min., to give a transparent film of high gloss and with excellent adhesion to the substrate.

CC 52 (Coatings, Inks, and Related Products)

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L4 1 SEA FILE=REGISTRY ABB=ON PLU=ON STYRENE/CN
 L9 1 SEA FILE=REGISTRY ABB=ON PLU=ON ACRYLIC ACID/CN
 L10 1 SEA FILE=REGISTRY ABB=ON PLU=ON ACRYLAMIDE/CN
 L12 2 SEA FILE=REGISTRY ABB=ON PLU=ON ("DIMETHYLACRYLAMIDE
 HOMOPOLYMER"/CN OR "DIMETHYLACRYLAMIDE, HOMOPOLYMER"/CN)
 L13 4307173 SEA FILE=HCAPLUS ABB=ON PLU=ON SUBSTRATE OR SURFACE OR GLASS
 OR SILIC?
 L14 354874 SEA FILE=HCAPLUS ABB=ON PLU=ON SILICA+PFT, NT/CT
 L15 281364 SEA FILE=HCAPLUS ABB=ON PLU=ON GLASS+PFT, NT/CT
 L16 25366 SEA FILE=HCAPLUS ABB=ON PLU=ON (L13 OR L14 OR L15) AND
 (HYDROPHOB? OR STYRENE? OR L4) AND (HYDROPHIL? OR L9 OR L10 OR
 L12 OR ACRYLAMID? OR DIMETHYLACRYLAMID? OR ACRYLIC ACID)
 L17 12113 SEA FILE=HCAPLUS ABB=ON PLU=ON L16 AND (SUBSTRATE OR GLASS
 OR SILICA)
 L18 1094 SEA FILE=HCAPLUS ABB=ON PLU=ON L17 AND HYDROPHOB? (3A) (LAYER
 OR COAT? OR SURFAC?) AND HYDROPHIL? (3A) (LAYER OR COAT? OR
 SURFAC?)
 L20 1515 SEA FILE=HCAPLUS ABB=ON PLU=ON L17 AND ?STYREN? AND ?ACRYLAMI
 D?
 L21 13 SEA FILE=HCAPLUS ABB=ON PLU=ON L20 AND ?BRUSH?
 L22 6 SEA FILE=HCAPLUS ABB=ON PLU=ON L18 AND ?BRUSH?
 L23 19 SEA FILE=HCAPLUS ABB=ON PLU=ON L21 OR L22
 L28 1554 SEA FILE=HCAPLUS ABB=ON PLU=ON POLYMER? (3A) ?BRUSH?
 L29 21 SEA FILE=HCAPLUS ABB=ON PLU=ON L28 AND HYDROPHOB? AND
 HYDROPHIL? AND (SUBSTRAT? OR SILICA? OR ?GLASS?)
 L30 36 SEA FILE=HCAPLUS ABB=ON PLU=ON L29 OR L23
 L31 5426 SEA FILE=HCAPLUS ABB=ON PLU=ON HYDROPHOB? AND HYDROPHIL? AND
 (SUBSTRAT? OR SILICA? OR ?GLASS?)
 L32 21399 SEA FILE=HCAPLUS ABB=ON PLU=ON "IMMOBILIZATION, MOLECULAR OR
 CELLULAR"+PFT, NT/CT
 L33 268 SEA FILE=HCAPLUS ABB=ON PLU=ON L31 AND (L32 OR IMMOBILI?)
 L34 17318 SEA FILE=HCAPLUS ABB=ON PLU=ON BIOCHEMICAL MOLECULES+PFT/CT
 OR BIOMOLECUL?
 L35 20 SEA FILE=HCAPLUS ABB=ON PLU=ON L33 AND L34
 L36 54 SEA FILE=HCAPLUS ABB=ON PLU=ON L30 OR L35
 L40 5809 SEA FILE=HCAPLUS ABB=ON PLU=ON HYDROPHOB? AND (HYDROPHIL? OR
 WATER SOL? OR WATER DISP?) AND (SUBSTRAT? OR SILICA OR
 ?GLASS?)
 L42 50 SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND ?BRUSH?
 L43 288 SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND (L32 OR ?IMMOBIL?)
 L44 52 SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L34
 L46 24 SEA FILE=HCAPLUS ABB=ON PLU=ON (L42 AND (L43 OR L44)) OR
 (L43 AND L44)
 L47 2 SEA FILE=HCAPLUS ABB=ON PLU=ON L46 NOT L36

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L47 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2002:927490 HCAPLUS
 DOCUMENT NUMBER: 138:14232
 TITLE: Functionalization of polylactide (PLA) surface using
 end-functionalized block copolymer of
 α-acetal-poly(ethylene glycol) (PEG)/PLA
 INVENTOR(S): Kataoka, Kazunori; Nagasaki, Yukio; Shibata, Naoya;
 Hoshino, Nobuhiko
 PATENT ASSIGNEE(S): Nanocarrier Co., Ltd., Japan; Iatron Laboratories,

SOURCE: Inc.
 DOCUMENT TYPE: PCT Int. Appl., 22 pp.
 LANGUAGE: Patent
 FAMILY ACC. NUM. COUNT: Japanese
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002096977	A1	20021205	WO 2002-JP5272	20020530
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1405871	A1	20040407	EP 2002-730784	20020530
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
US 2004171808	A1	20040902	US 2003-479246	20031201
PRIORITY APPLN. INFO.:			JP 2001-161788	A 20010530
			WO 2002-JP5272	W 20020530

AB A method of binding a substance to the free ends of **water-sol.** polymer chains which are bonded at the other ends to a **substrate** surface so as to form a **brush-like** structure and have, at the free ends, reactive functional groups capable of reacting with the substance to be incorporated, by reacting the substance to be incorporated with the reactive functional groups in the presence of a **water-sol.** polymer which has the ability to accelerate the binding, is disclosed. Proteins, DNA, or cells may be incorporated by reacting with a terminal aldehyde group of PEG **immobilized** on latex particle or macromol. micelle. This paper deals with novel approaches established for the construction of a functionalized poly(ethylene glycol) (PEG) layer, **PEG-brushed** layer possessing a reactive group at the free end to tethered PEG chain, on **substrates**. An AB-type block copolymer composed of α -acetal-poly(ethylene glycol) (PEG) as the **hydrophilic** segment and polylactide (PLA) as the **hydrophobic** segment was synthesized, and utilized to construct the functionalized PEG layer on the biodegradable polylactide surface by simple coating. In this way, a PEG-**brushed** layer with a terminal aldehyde group was readily prepared which may have both non-fouling and ligand-binding properties. Based on the characterization of these PEGylated surfaces from a physicochem. (contact angle, potential, ESR) as well as biol. (protein adsorption) point of view, the authors' strategy to construct a functionalized PEG layer was confirmed. Active functional groups were present at the tethered PEG-chain end, these materials will have a high utility in the biomedical field. Attachment of bovine serum albumin and anti C-reactive protein (CRP) rabbit antibody F(ab') fraction, in the presence of PEG6000, is described.

IC ICM C08G085-00
 CC 35-10 (Chemistry of Synthetic High Polymers)
 Section cross-reference(s): 9
 IT Polymers, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
 (block, of water sol. and insol. polymers;
 functionalization of polylactide (PLA) surface using end-functionalized
 block copolymer of α -acetal-poly(ethylene glycol) (PEG)/PLA)

IT Immobilization, molecular or cellular
 (functionalization of polylactide (PLA) surface using
 end-functionalized block copolymer of α -acetal-poly(ethylene
 glycol) (PEG)/PLA)

IT Micelles
 (macromol., PEG immobilized on; functionalization of
 polylactide (PLA) surface using end-functionalized block copolymer of
 α -acetal-poly(ethylene glycol) (PEG)/PLA)

IT Latex
 (particle, PEG immobilized on; functionalization of
 polylactide (PLA) surface using end-functionalized block copolymer of
 α -acetal-poly(ethylene glycol) (PEG)/PLA)

IT Polymers, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (water-sol.; functionalization of polylactide (PLA)
 surface using end-functionalized block copolymer of
 α -acetal-poly(ethylene glycol) (PEG)/PLA)

REFERENCE COUNT: 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L47 ANSWER 2 OF 2 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2002:539935 HCPLUS

DOCUMENT NUMBER: 137:90548

TITLE: Polymer brushes for immobilizing
 molecules to a surface or substrate having
 improved stability

INVENTOR(S): Klaerner, Gerrit; Benoit, Didier; Charmot, Dominique;
 Nomula, Srinivas; Piotti, Marcelo E.; Mazzola, Laura
 T.

PATENT ASSIGNEE(S): Symyx Technologies, Inc., USA

SOURCE: PCT Int. Appl., 162 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002056021	A2	20020718	WO 2002-US746	20020110
WO 2002056021	A3	20030918		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 2003108879	A1	20030612	US 2002-43394	20020110
PRIORITY APPLN. INFO.:			US 2001-271692P	P 20010110
AB The invention concerns sensors for determining the presence and concentration of				

bio-mols. in a biol. sample in the form of polymer **brushes**, which comprise a **substrate** having a surface modified with a **hydrophobic** polymer segment, attached to which is a **water-dispersible** or **water-sol.** polymer segment having functional groups that bind probes. The method of synthesis of such sensors preferably includes use of controlled free radical polymerization techniques, which allows for controlled architecture polymers to modify the surface of the **substrate**, and the use of monomers possessing functional groups which do not require activation prior to probe attachment. In this manner functional groups in the polymer chain are removed from the surface, which allows for solution chemical to be more realistically reproduced with the benefits of a solid bound probe.

IC ICM G01N033-543
ICS G01N033-545; C08J007-16; C08F293-00; C08F220-00
CC 9-1 (Biochemical Methods)
Section cross-reference(s): 35
ST biosensor polymer **brush immobilization** polynn
functional group; nucleic acid DNA RNA peptide enzyme lipid hormone drug
IT Carboxylic acids, properties
RL: PRP (Properties)
(derivs.; polymer **brushes for immobilizing** mols. to
a surface or **substrate** having improved stability)
IT Metals, analysis
RL: ANT (Analyte); ANST (Analytical study)
(ions; polymer **brushes for immobilizing** mols. to a
surface or **substrate** having improved stability)
IT Amino group
Animal cell
Biosensors
Genetic markers
Hydrophobicity
Hydroxyl group
Immobilization, molecular or cellular
Microspheres
Molecular association
Molecular recognition
Molecular weight
Reaction kinetics
UV radiation
(polymer **brushes for immobilizing** mols. to a
surface or **substrate** having improved stability)
IT Carbohydrates, analysis
Collagens, analysis
Elastins
Enzymes, analysis
Hormones, animal, analysis
Lipids, analysis
Nucleic acids
Peptides, analysis
Phosphates, analysis
Phospholipids, analysis
RL: ANT (Analyte); ANST (Analytical study)
(polymer **brushes for immobilizing** mols. to a
surface or **substrate** having improved stability)
IT Peptide nucleic acids
RL: ANT (Analyte); ARG (Analytical reagent use); DEV (Device component
use); ANST (Analytical study); USES (Uses)
(polymer **brushes for immobilizing** mols. to a
surface or **substrate** having improved stability)

IT DNA
RNA
RL: ARG (Analytical reagent use); DEV (Device component use); ANST (Analytical study); USES (Uses)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

IT Nucleotides, uses
Polymers, uses
cDNA
RL: ARG (Analytical reagent use); DEV (Device component use); PRP (Properties); ANST (Analytical study); USES (Uses)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

IT Carboxylic acids, properties
Glass, properties
Thiols (organic), properties
RL: PRP (Properties)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

IT Polymerization
(radical; polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

IT Drugs
(targets; polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

IT Polymers, properties
RL: PRP (Properties); REM (Removal or disposal); PROC (Process)
(unbound hydrophobic; polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

IT 106-91-2, Glycidyl methacrylate 21282-97-3 29513-26-6,
4,4-Dimethyl-2-vinyl-2-oxazolin-5-one
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

IT 38862-24-7P
RL: DEV (Device component use); PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

IT 60799-41-9P 129219-08-5P
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

IT 258352-22-6P
RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

IT 7440-21-3, Silicon, properties
RL: PRP (Properties)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

IT 109-83-1 2680-03-7, N,N-Dimethylacrylamide
RL: RCT (Reactant); RACT (Reactant or reagent)
(polymer brushes for immobilizing mols. to a surface or substrate having improved stability)

IT 17225-73-9P 318969-33-4P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
(Reactant or reagent)
(polymer brushes for immobilizing mols. to a
surface or substrate having improved stability)

IT 90120-75-5P
RL: SPN (Synthetic preparation); PREP (Preparation)
(polymer brushes for immobilizing mols. to a
surface or substrate having improved stability)